# mericanArtisan

The Warm Air Heating &

and Sheet Metal Journal

Vol. 97, No. 15

CHICAGO, APRIL 13, 1929

\$2.00 Per Year



REMIER-DELUXI

## PREMIER DEALERS

Make Money

IN SPITE OF

## CHAIN STORE

Cut-Price and Cut-Throat

## COMPETITION

That fact is well established. Here is an example of what they are up against.

You would go bankrupt if you did the same thing on

your own money.

NOW THEX, the manufacturers who are responsible for they out from the business they get from the business the business they get from the business the business they get from the business the business the business they get SON 1111. The manufacturers who are responsible for they get from business they get from business they get like such tactics can't live on the business. They make their money from good dealers like branches. They make their money from stores. They take branches and then lose it on their branch stores. branches. They make their money from good dealers like yourself and then lose it on their branch stores. To conduct broad out of the months of mon who are trying to conduct yoursen and men lose it on their branen stores. They take bread out of the mouths of men who are trying to conduct a togitimate business.

a legitimate business.

THAT'S why we say, SOT OPERATE A STRING TURER WHO DOES NOT OPERATE A STRING OF BRANCH STORES.

OF BRANCH STORES.

THE Premier Dealer in the above manufaced to the string of t OF BKANCH STOKES.
THE Premier Dealer in the above mentioned town made the premier Dealer in the above mentioned town made the premier despite such competition.

THE Premier Dealer in the above mentioned town made used town made emperition.

The Premier Dealer in the above mentioned town made used to the used to the emperition or end to the emperition of the emperitio Premier Money Making Methods.

EYOU are bothered with chain store competition or cut to get in home to get in him to get in home to get in him HE YOU are bothered with chain store competition or cut, throat competition, it will pay you to ask us how to fight it.

Throat competition, it will pictorial for the complete storic.

Read the April Pictorial for the complete storic.

The tourth of a Series of twelve ads to appear in the American Artisan-

## an example Of Chain Store Competition As Applied

THE JONES Manufacturing Company (which isn't their name), come into a town and hire Mr. Smith to manage a branch store for them branch store for them.

THE JONES Company pays \$10.00 on every furnace he a week and a commission of WHETHER OR NOT HE sells, REGARDLESS OF THE JOB. DREMIERWARM AIR HEATER CO., DOWAGIAC, MICH.

Ta Furnation

Ren pres it is air I

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thing on sible for st from lers like ney take conduct UFAC. TRING m made used n or cut fight it.

## SCIENTIFICALLY ADAPTED

to the

## Warm Air Furnace



THIS silent Northern Oil Burner rightly applied to your good Standard Code Furnace installation produces fully automatic heating unit unrivalled in the heating industry.

Remember the Northern was created expressly for use with warm air furnaces and it is successfully sold and installed by warm air heating contractors.

Write for full information NOW.

### SOUNDLESS-

A gentle purr, barely audible at the burner but never in the rooms above. The Northern flame is diffused, gentle, slow. It is not forced, but allowed to burn naturally. The result is a clear hot flame with maximum radiant surface.

### ODORLESS-

Slow ignition. A slow fire and induced draft insure a partial vacuum in the fire box and odorless air passages. No fire box pressures. No fan to blow the heat up the chimney.

### HEAT BALANCE-

Maximum combustion efficiency obtained with small oil flow insuring lower stack temperatures and complete heat absorption by the plant.

### **HEAT APPLICATION**

Cool ash pits and cold-air inlets. Fire box temperatures increase gently and gradually from the grate line up.

### COMPLETE AUTOMATIC CONTROL—

Every Northern Oil Burner comes complete with the latest and best Thermostatic equipment obtainable. Automatic draft regulation and oil control insure maximum efficiency and consistent operation.



WE need trained warm air heating men of character to present the Northern Oil Burner to dealers.

Company

"Where Silence Is Golden"

FULLY AUTOMATIC 1702 Central Ave., -

Minneapolis Minn.

## THE SUN NEVER ROSE ON A MORE OPPORTUNE TIME TO SELL FURNACES

BUSINESS is on the up grade, automobile manufacture is ahead of last year, radio sales are enormous, the agricultural situation is improving, in fact every line of business is looking forward to prosperous business this year.

Conditions in the heating business never looked better than at present. Dealer's early specifications are heavier, manufacturers are planning on increased production and conditions in the industry are greatly improved.

The long continued efforts of the National Warm Air Heating Association, backed by the Research work of the University of Illinois, are bearing fruit. A bigger and better class of homes are turning to warm air heating because more people are believing in it, furnace men are doing better work and on a quality basis, without reference to price or competition.

Forced air heating, air filtering and conditioning are becoming common and the whole industry has taken a new lease on life. Now is the time to prepare to cash in on the new conditions that are just over the threshold.

CALORICS will help you.

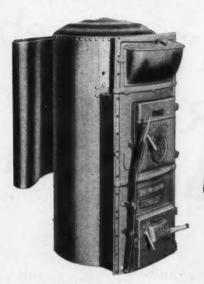
We can furnish repairs for all old models Monitor products



MONITOR-CALORIC DIVISION
MARSHALL FURNACE CO.
MARSHALL, MICHIGAN

## In ALL These United States ...In EVERY Canadian Province

In Australia, Alaska, New Zealand





the Western

ERN

STERN

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WESTER

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...WESTERN..

ERN.WESTERN

N...WESTERN...

EVERY Western Steel Furnace is completely assembled at the factory to insure all parts fitting perfectly. Western distribution covers every state in the Union—every province of Canada—Australia, Alaska, and New Zealand.

The Western factory is advantageously located at the head of the Great Lakes where low water rates are available three-fourths of the year. The numerous distributors listed below make any section of the country convenient Western territory.

WESTER

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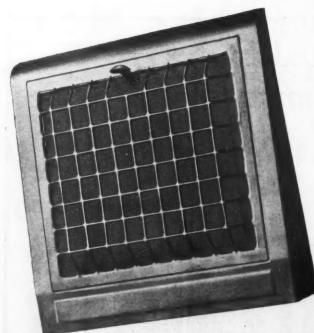
TERN...WESTERN

## W E S T E R N STEEL PRODUCTS CO.

130 Commonwealth Ave.

Duluth, Minn.

Distributed by:

Atlanta, Ga...... Moncrief Furnace Company Kansas City ...... Kansas City Furnace Co. Pittsburgh, Pa..... Wagener-Proie Furnace Co. San Francisco, Pacific Sheet Metal & Furnace Co. 

## The Baseboard Register

## With The Snaptite Face

THERE are no screws or turn-buckles. The face snaps I snugly into place and is easily and quickly removable. Its convex shape makes a clean-cut, good looking job.

Full capacity—nothing to impede the full flow of warmth. Too often the claim of full capacity means nothing because of the throat size of the register box. Walworth Registers in every case have more than ample capacity to take care of the throat

The valve deflects the heat from the wall, keeps out lint sizes on the standard register boxes. and dust and stays put in any desired position.

All sizes are in stock—there's no delay in filling your order. Write today.

The Forest City-Walworth Run Foundries Co. Member National Warm Air Heating Association 2500 W. 27th St., Cleveland, Ohio

VALWORTH

## You Can Install the Most Efficient Furnace Fan



The Canton Furnace & Manufacturing Co.

Canton, Ohio

## CHALLENGE

## All Cast



### YOUR PROBLEM

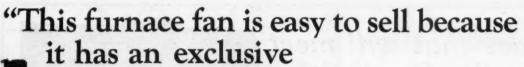
Hard competition plus an ordinary product, high installation cost, indifferent manufacturer co-operation, and slow or questionable shipping service. Question: Find X, the unknown.

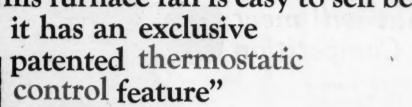
### **OUR ANSWER**

The Challenge All-Cast Furnace, rightly priced, plus real points of merit, low installation cost, close and sympathetic manufacturer relationship, and 24-hour shipping service, all make X easy to find. X means profit for you!

Write for complete details NOW!

STANDARD FOUNDRY AND FURNACE COMPANY DE KALB, ILL.









THERMOSTATICALLY CONTROLLED AUTOMATIC **FURNACE** 

This is the-PATENTED MERCURY

No. 12 Unit is of a larger size having 14 inch inlets and outlets and is designed for the larger homes.

IT fits in the casing and the rise and fall of the temperature causes it to switch the fan on and off. The fan operates when the temperature says so. Thermostatic Control Warm Air Furnace Fan, licensed under Re. Pat. No. 15531, can be used only by the A-C Mfg. Co., Pontiac, Ill.



## -and because it is efficient, quiet and economical to own

FOLKS get the idea of forced air heating and cooling quicker when you show them the A-C. It's what they want—true automatic fan heating. And it is highly

efficient. Its design is simple and correct-it is made of the highest grade equipment for reliable and long service.

It's easier to install, too, which means a low labor cost for installing. It has no back-draft, and no whirl-

It fits in bypass of one, two, or three cold air return installations and offers no obstruction to gravity operation.

ORDER FROM YOUR JOBBER

A · C Manufacturing Co. 417 Sherman St.--Pontiac, Ill.

And it is the only complete fan equipment.

Price includes Mercury Control, Heat Booster, Fan Unit, Fan with Emerson Motor.

> Fans up to and including thirty-six inches in diameter are furnished upon request.

It is so economical that it enables you to get more business and better prices by or schools, etc.

or schools, etc.

including automatic forced air with every installation bid. Thousands of warm air heating contractors say it's just the thing. Its big and

quick success has caused live jobbers everywhere to take it on. Write your jobber today—or send coupon to us.

A-C MFG. CO., PONTIAC, ILL. Send me complete details	
Name	
Street Town	State
JOBBER'S NAME	

COMPLETE TO THE DEALER AT.

LARGER SIZE ALSO FOR SCHOOLS, ETC.

This is our No. 9 Fan Unit having 10 inch out-

lets and inlets. This number is the size for the smaller homes.

## A Furnace that will meet High Quality Competition



Vernois Gas Ranges and Circulators

**VERNOIS** Features Make For Increased Efficiency and Easier Operation

#### Note These Features:

Special heat resisting iron is used throughout.

Long Upright shaking lever makes stooping unnecessary and simplifies shaking.

Covered deep cup joints. Large ash pit.

Large reversible onepiece radiator.

Many other desirable features.

Write for catalogue showing full line.



**FURNACES** 



MT. VERNON FURNACE & MFG. CO. Mt. Vernon, Ill.



### The **AUERISTOCRAT**

of all registers, combining air capacity, decorative and concealing features.

Designed to conform with the Standard Code so they fit all standard boxes.

Auer Patented mechanical features make it perfect in operation,—quick and easy to install.

Auer's Save Hours and Dollars

The AUER REGISTER CO. Cleveland, Ohio



Many dollars ahead in value yet they cost less

IT'S our selling and manufacturing methods that cut the cost. No over-loaded sales expense —no high priced, unproductive costs to add to the fur-

You get real quality —a properly designed and constructed furnace that is up-to-date in every worth-while feature.

Buy furnaces on a quality basis and you'll buy Brillions—at less cost.

Just fill in the coupon—no obligation—get our prices and full construc-tion details.

BRILLION FURNACE CO., 17 No. La Salle St., Chicago. 200-300 Park Ave., Brillion, Wis. Send me full details and catalog No. 80

Address .....



Newly Designed One-Piece Cellular Firepot

and another big improve-ment, the Elbow Shaped Flue Collar on inside of wise open dome to the top before entering the flue, make this famous wise high quality furnace a still bigger favorite.

Write for our special broad-side which gives full details of construction.

### No other furnace has this worthwhile Radiator Clean-Out feature

because it is a Patented Wise furnace feature. This patented construction alcommunication tween top radiator and feed

section bringing the opening of the fire flues directly into the feed chamber. The flues are therefore easily accessible
for cleaning through the upper feed door. The
home owner has greatly approved of this
new feature. The 20 Series also has
the new one - piece Cellular Firepot.



—and the New Wise Steel Furnace has an important exclusive feature also

WISE 20 SERIES CAST FURNACE

WISE STEEL
FURNACE

FURNACE

The feature. The weak spot in steel furnace construction has been done away with in the Wise Steel Furnace. The bottom of the Wise radiator has a heavy Cast Iron Soot Box and Clean-Out. It has all the other high grade modern features of construction and Special Design Grates. It is both welded and riveted.

Here is truly the guality than the structure of the struly the guality than the struly the structure.

Here is truly the quality line for your business.
The Wise line is famous for over 25 years of successful furnace manufacturing. Now you can confine all your furnace purchases to one line.

WISE FURNACE COMPANY
AKRON, OHIO

### Ask Your Wife

-or any wife the kind of furnace preferred and the answer will be unanimous for an economical, gas tight, and dust tight furnace.

The housekeeper is the final judge and jury of every installation you make; her decision is vital to your SUCCESS.

There will be no doubt about the result if you install "AFCO" Boiler Plate

Furnaces. They are riveted gas tight and the feed pouch and ash pouch extend throughthe casing without a joint.

Get the full story in the "AFCO" Catalog which points the way to bigger furnace profits. Your free copy is waiting, write today. Use the handy coupon.

American Furnace Co. St. Louis, Mo.



### AFCO **Boiler Plate Furnaces**

AMERICAN FURNACE CO.,

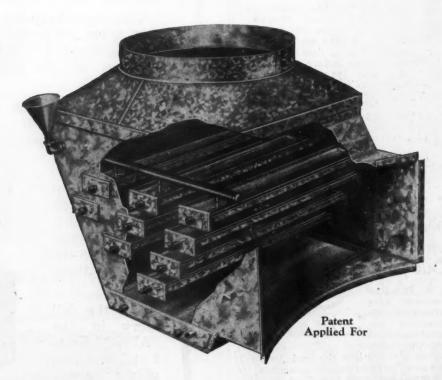
St. Louis, Mo.

Please send your complete catalogue and sales plan.

Address .....

## Something Entirely Different

- COMBINED AIR CLEANER, HUMIDIFIER
AND COLD AIR SHOE -



## THREE Purposes Combined In One

FIRST: COLD AIR SHOE. It takes the place of an ordinary cold air shoe, retaining full, unobstructed air passage.

SECOND: CLEAN AIR. A series of water pans are placed in a staggered position, forcing all the air to impinge on the water which attracts the dust and lint, leaving only clean air to enter the furnace casing, then distributed to the rooms above.

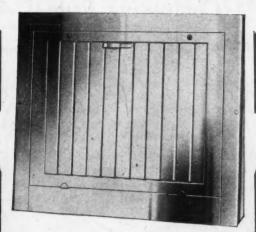
THIRD: **HUMIDITY.** PERFECT HUMIDITY is created by the cold air passing over the water and absorbing the moisture that is required for a healthy atmosphere.

MANUFACTURED BY

F. MEYER & BRO. COMPANY PEORIA, ILLINOIS

Nothing Else Like It --- Write for Details

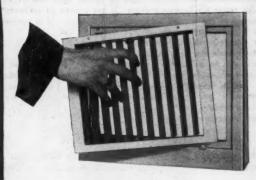
## MODERN



in DESIGN and CONSTRUCTION

## New Standard

STEEL BASEBOARD REGISTER



PVERYTHING in a modern home should be modern—there should be complete harmony of design and you can measure up to the demand when it comes to the question of registers.

The New Standard looks well in any room and especially in rooms done in the modern trend of decorating.

Its neat, attractive and simple modern design is pleasing—it adds to any room. Its mechanical and air capacity features are in accordance with requirements of the Standard Code—for which it is named.

A two-piece, easy to clean register having the simplest and most effective operation. Maximum air capacity, minimum air resistance and highest

ALL STANDARD COLORS AND SIZES.

You can get a better profit by using this Modern register without adding to the cost —write for catalog today.

### WATERLOO REGISTER CO. Waterloo, Iowa

Seattle, Wash., Office: 2211 1st Ave. Los Angeles, Cal., Office: 822 Clanton St.

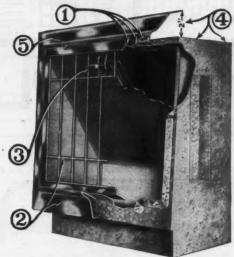


## on the register means no streak on the wall ~

WATCH the stock market if you will, but watch the opportunities for more and quicker profit in your own business first.

Have you watched the increased demand for cleanliness in warm air heating? Have you watched and are you profiting by the increase in No Streak Register Sales due to this increased demand for cleanliness?

Not only on new installations but on old jobs dealers everywhere are serving up-todate register requirements with the Rock Island No-Streak.



- Expanding Interlapping Slip-joint connection which prevents the air from streaking the walls.
- Steel frame and Removable Grille, having Over-Capacity Free Air Opening.
- Malleable Lever easily operated by Hand or Foot, Absolutely Trouble-proof.
- 4. Galvanized, tin lined box having Floor line, Wall line and Recessed top collar. Note 2 inch trimming space around box.
- .5. Easy fastening by two large Oval Head Bolts.

Write for Catalog No. 9 which tells all about the Rock Island line.

ROCK ISLAND REGISTER CO. ROCK ISLAND, ILL.

ROCK ISLAND REGISTER CO., 2435 5th Ave., ROCK ISLAND, ILL. Send me your Catalog and Price List.

Street ..... Town..... State.....

A.A.





### Our New Self-Locking Double Stack

THIS new design is the result of over 25 years' experience in making good Furnace Pipe. When the new Chicago stack is put together it is put to stay and it is extremely easy to erect. The more you know about good furnace pipe the more you will appreciate Chicago Pipe. Ask about this improved pipe today.

Write today for our Catalog No. 21, illustrating and describing Furnace Pips and All Furnace Supplies.

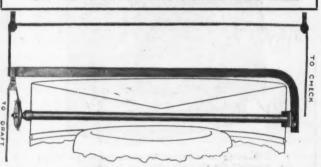
CHICAGO FURNACE SUPPLY CO.

1276-78-80-82 Clybourn Ave.

CHICAGO



### HERMO-CO FOR WARM AIR FURNACES



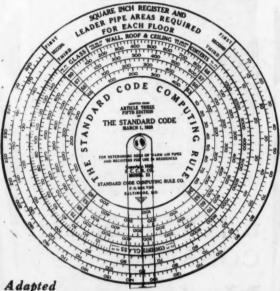
Reasons Why--"And How" No replacements necessary No upkeep expense First cost is last cost Will outlast your furnace Gradual draft control Controls heat at source No thermometers

THERMO-CONTROL	REGULATOR CO.
710 Market St.	Youngstown, Ohio

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Name	,									• •			0 (															0.0	

Street..... State...... State.....

### The STANDARD CODE Computing Rule



from Article Three

5th Edition

of the

## STANDARD CODE

### Simple to Operate

THE Computing Rule is not a novelty, but, a well designed mathematical device, for figuring leader pipe and register areas for warm air heating systems. It has proven its accuracy in estimating and has passed the experimental stage. It is operated similar to an Engineer's slide rule.

similar to an Engineer's slide rule.

The complete instructions are easily understood. You can learn to operate the Rule in less than one hour.

Results can be had without a single Division, Multiplication or Addition problem, as required in Article Three of the Standard Code. Not a chance for a mathematical error.

"Remember, you do not have to refer to a lot of loose parts or awkward tables."

Simplifies accurate estimating.

### Handy Pocket Size

RULES are 51/2 inches in diameter—1/8 inch thick. Has an upper and lower revolving disc with a hairline indicating

arm.

It is made of extra heavy and specially prepared celluloid, which reduces shrinkage and warping to a minimum. It is washable and unbreakable.

Can be carried comfortably in your pocket.

### Here Is What The Computing Rule Will Determine:

- The areas necessary for 760 inside temperature when the outside temperatures are ZERO, 10, 26 and 30 degrees ABOVE or BELOW zero.
- The warm air pipe and register areas for First, Second and Third floor rooms.

  The areas necessary for 760 inside temperature

  - 5 The Unusual Exposure requirements as the 10% for East and West and 15% for Northwest rooms.

"Absolute Correct Results"

Price, \$3.00—Postpaid AMERICAN ARTISAN

620 South Michigan Avenue CHICAGO, ILLINOIS

## Did you miss the Convention ....

IF you did read the report which is in this issue of AMERICAN ARTISAN. Learn what developments are taking place which mean more and better warm air heating business for the progressive dealer.

Study your own business—see if you are ready for increased business.

Look into the question of furnaces and furnace design-learn how important it is to sell the type and quality of furnace the public needs.

The Ath-A-Nor is a specially designed furnace having a patented Three-Way Air Blast Construction which makes it a Smokeless soft coal burning furnace of the highest grade.

The Ath-A-Nor design is patented-no other furnace is like it-write for catalog and details today.





## **SMOKEL**

WE ARE MEMBERS OF AND BE-LIEVE IN THE NATIONAL WARM AIR HEATING ASSOCIATION

The May-Fiebeger line of furnaces is complete—it comprises cast and steel furnaces of several designs—ALL HIGH QUALITY AT ATTRACTIVE PRICES.

The May-Fiebeger Co.

Newark, Ohio



## There's finer features in The FLORENCE --- the real Hot Blast

MANY so called hot blast furnaces are imitators of the Florence Hot Blast Stove principle which was originated over half a century ago and now is obtainable in a Furnace. The Florence may be controlled entirely by the hot blast regulator—a test, no other claimant of a hot blast can duplicate.

The Florence is first, a fuel saver and gas and smoke consumer—second, changes the cheapest coal to coke—third, produces fewer ashes—fourth, is absolutely sootless, and fifth, guarantees positive control of the fire. Live wire dealers are linking their names with the Florence—you can do the same and make more money.

## C. EMRICH COMPANY Founded in 1861

COLUMBUS, OHIO

Manufacturers also of the famous Supreme Florence Heater and Florence Stove

MAIL THIS COUPON for COMPLETE DETAILS

### YOU WILL SAVE TIME ON EVERY JOB



SAMPLE SECTIONS UPON YOUR REQUEST! CHAS. JOHNSON CO. INC. PEORIA, ILLINOIS



### Automatic Humidifier

"Protects Health With Proper Moisture"

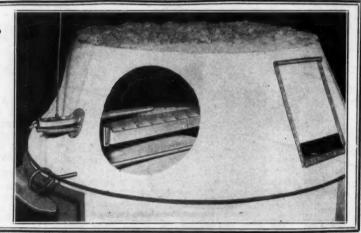
THE ONLY Humidifier controlled thermostatically—by the heat of the furnace!

Get your share of 1929 Profits and do your customers a favor!

More Profit on one sale than some furnace jobs pay!

Pays for itself in one year Send for booklet, prices and full particulars.

Automatic Humidifier Co., Cedar Falls, Iowa





IF there is a tool or machine that you need and you don't know where to get it—

Write to the

Notes and Queries Dept.

of

**AMERICAN ARTISAN** 

## Cleaning Furnaces Pays You Two Good Profits



One furnace dealer with five Super Service Cleaners, took in \$8,000 gross his first season.

In addition he kept thirty men on repair work all last summer; and cashed in on a number of furnace sales.

The light and powerful Super Service is handled easily by one man, keeping overhead down to rock bottom.

Write us today; get your share of this new, profitable business while the getting is good.

Terms to any responsible dealer

The National Super Service Co.

816 Lafayette St.

Toledo, Ohio



## PATTERNS FOR STOVES

THE CLEVELAND CASTINGS PATTERN COMPANY CLEVELAND, OHIO

### PATTERNS

FOR STOVES AND HEATERS IN FIRST-CLASS WOOD and IRON VEDDER PATTERN WORKS ESTABLISHED TROY. N. Y.

STOVE PATTERNS
OUINCY PATTERN COMPANY

QUINCY, ILLINOIS

## BRILLIUN PORTABLE VACUUM ELECTRIC FURNACE CLEANER

Sturdy — POWERFUL — Light



CLEAN up big profits with the Brillion Furnace Cleaner. It's the easiest to handle and its light but durable construction makes it possible for one man to use.

Just put it in a small car and start out after prospects—everyone wants their furnace cleaned and it is easy for you to get the work AT A GOOD PROFIT. No Dirt, No Dust while cleaning.

Don't overlook the fact that furnace cleaning gets you in the basements—you get repair work and replacement sales which you would not get otherwise.

BRILLION FURNACE COMPANY
17 No. LaSalle Street, Chicago. 200-300 Park Ave., Brillion, Wis.
Send me full details on the BRILLION FURNACE CLEANER.

Name

Mention AMERICAN ARTISAN in your reply-Thank you!

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United States ..... \$2.00 Canada .....\$3.00 Foreign ......\$4.00

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CHICAGO, APRIL 13, 1929.

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### JOY IN LIFE DEFINED

A great deal of the joy of life consists in doing perfectly, or at

least to the best of one's ability, everything which he attempts to do.

There is a sense of satisfaction, a pride in surveying such a work

—a work which is rounded, full, exact, complete in all its parts—which the superficial man, who leaves his work in a slovenly, slipshod, halffinished condition, can never know.

It is this conscientious completeness which turns work into art. The smallest thing, well done, becomes artistic.—William Mathews.

## Asbestos Covering

- FOR WARM AIR PIPES -

## -in Two New Convenient Forms -



### Asbestos Elbow Sheets

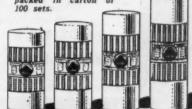
FOR those contractors who cover the entire pipe with asbestos paper we have brought out these convenient time and money saving Asbestos Elbow Segments. No more fussing to get a clean, perfect fitting elbow covering. These Sal-Mo Sheets come die-cut into segments for 8 in., 9 in., 10 in. and 12 in. elbows. No cutting, no waste, more speed and a perfect job.

### FREE SAMPLES

WE want you to get acquainted with these Sheets—let us send you some FREE samples for your

SEND. COUPON





SALL MOUNTAIN CO., 176 W. Adams St., Chicago

Gentlemen:
Send me FREE Samples of Pipe Joint
Tape and Asbestos Elbow Segments.

### SALL MOUNTAIN CO.

Asbestos Pipe Joint Tape

FOR the warm air furnace man who is stripping the joints Sal-Mo originated these time and labor saving Asbestos stripping rolls. No more time wasted in sawing and cutting, no more ragged edges but neat tight fitting joint covering with Sal-Mo stripping rolls. Economical because there is no waste, speedy because it is ready to apply and accurately cut. Write

176 W. Adams Street

CHICAGO

for prices now and save money and time.

Say you saw it in AMERICAN ARTISAN-Thank you!

## MIDLAND HAS DONE IT!

### NOW-A QUALITY STEEL FURNACE AT SIXTY-FIVE DOLLARS

OW you can meet competition with a quality steel furnace at a low price. New up-to-theminute equipment and advanced production methods have done it.

We considered ways and means to give the furnace installer a quality steel furnace which would allow him to meet all competitive prices and at the same time give the buyer satisfaction. The result is the Benjamin Franklin at \$65.00.

This gives you a quality steel furnace of the same gauge steel as the Famous Midland TRUE-STEEL and constructed to give the buyer satisfaction.

HERE ARE A FEW BENJAMIN FRANKLIN FEATURES:

600000000

6 BENJAMINO FRANKL

pan at top.

6

6

Full cast iron Outside shaker front with water lever-Efficient Radiator.

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LEANER HEAT







Vol. 97

CHICAGO, APRIL 13, 1929

No. 15

## Greater Service Means Greater Profits Warm Air Heating Men Learn at Indianapolis

Annual Meeting at Claypool Reveals Need for Greater Cooperation from Manufacturers and Dealers

By GEORGE DUERR

T HAT too many furnace manufacturers are trying to sell furnaces in territories that cannot net them a profit was the trend of opinion at the sixteenth annual meeting of the National Warm Air Heating Association, held in the Claypool Hotel, Indianapolis, April 9, 10 and 11, 1929.

The granting of large credit indiscriminately by manufacturers and unwarranted price cutting by furnace dealers was denounced, and the importance of giving the public the service it has a right to expect was stressed, in order that the goal toward which the industry is working may be attained.

The opening address of the convention made by "Dick" Miller, former President of the Indianapolis Chamber of Commerce, who expressed himself as very much in favor of the good work that the trade association is doing, that he has always taken a great deal of pleasure in welcoming any trade body to Indianapolis.

"Without trade associations industrial progress would be practically impossible," said he. "The country is changing so rapidly that the business man must keep constantly on the alert, in order to keep abreast of the times.

"Mass production," he thought, "is a sound method of doing business, but before going into that method of production the business man must be sure that his particular line of business is adaptable to

mass production. Where mass production is attempted without proper assurance that the business is adaptable, failure is the inevitable result."

Following the introduction of

### TRIGG ELECTED PRESIDENT

President, J. M. Triggs, Huntington.

First Vice-President, Chas. Seelbach, Cleveland.

Second Vice-President, H. T. Richardson, New York.

Managing Director and Treasurer, Allen W. Williams, Columbus.

Mr. Miller and his address of welcome, the official family of the association was introduced. The Nominating Committee consisting of Mr. Jones, Mr. Hill, Mr. Robinson, Mr. Hynds and Mr. Lamneck was appointed. The Memorial committee was made up of Allen W. Williams, Ros Strong and Fred Bishop.

The annual message of the president was delivered by President Hall. In it he outlined briefly what the association had accomplished since its inception, laying particular stress upon that part of the work that has been undertaken during the past two or three years. Some of the hopes, ambitions and fears of the association for the future were outlined by the President.

W. B. Burrus, one of the most

forceful speakers that has ever been on any program of the National Warm Air Heating Association, addressed the assembly on "Profit or Loss" and he surely did tell those in attendance a-plenty. He began by stating that most people try to learn things out of their own experience when sensible people know that no man can begin to learn one small fraction of the things there are to be known by experiencing them himself.

He said that there are four ways of making money: 1. By speculation, which is very hazardous. 2. By inheritance, which is very uncertain. 3. By one's own experience. 4. By profiting by the experience of others. Out of these four ways of making money most people prefer to employ a combination of the last two; that is, combine your own experience with the experience which other people have had on similar subjects. "Ask the man who knows," is his slogan.

In illustrating the value of drawing on the experience of others Mr. Burrus spoke of an occasion on which he had attempted to kill some ants that were making a nuisance of themselves in his garden. He tried everything he could think of to kill the ants, but without success. Then one day he happened to be in Washington and thought he would call on the department of agriculture to see if they had any information which he could use. He found a man in the department who had

COMMITTEES of the National Warm Air Heating Association as these are constituted following the meeting of the Board of Directors immediately after the close of the convention at Indianapolis.

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First Vice Pres., Charles Seelbach, Cleveland, Ohio
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Fred Bishop

A. S. Robertson

W. G. Wise

studied ants and their habits all his life. He knew just what must be done to rid any garden of the ant, and this information he imparted to Mr. Burrus in less than five minutes.

Mr. Burrus also had a great deal to say about the folly of volume without profit. He called attention to the fact that too many men go wild over volume. Mass production seems to get into their blood and they go after it with all their might and main regardless of whether a market exists or whether people want the goods which they produce. "They are a good deal like the man," said Mr. Burrus, "who had two sons and a daughter. He determined to make successes of them all by forcing them to go into lines of business for which they had no liking. The result was that one of the sons turned out to be a crook, the other a drunkard and the daughter a woman of loose character. He had failed in his attempt, because his determination had blinded him to the fact that his children had certain aptitudes which were not suited to the work which he was trying to force onto them. Volume and loss are sometimes synonymous. Some manufacturers feel a divine right to dominate. And these same manufacturers fail utterly to realize that the spirit of domination is the beginning of the end of profit. Where we have cooperation we have profit, but where there is no coöperation there can be no profit.

"It is absolutely essential for every business man to analyze his own problem," said Mr. Burrus. "It is essential that there be a price large enough to include a profit. It is essential that the territory in which the firm expects to operate be analyzed from the standpoint of the needs of the prospective customers."

Three questions which every man should ask himself in regard to his business stand out in the process of the analyzation, according to Mr. Burrus. These are:

1. What is wrong? Face the problem fairly.



Warm Air Furnace Manufacturers and Dealers Enjoying Banquet During the Sixteenth Annual Convention of the National Warm Air Heating Associaton, Hotel Claypool, Indianapolis, Indiana

2. What is wrong with me that makes the industry wrong?

3. What are the individual members of the association doing to make the association better for all? Every business man should look into his acts and see if they are all that they should be. And in regard to association work it should be the duty of men in the association to analyze the needs of the non-members and try to help them so as to interest them in becoming members. It is necessary for the men in the association to find out what the other fellow's grievances are before correction can be made.

Every manufacturer who goes into the business of turning out a product has three problems which are facing him constantly if he wishes to make a profit out of his business.

1. He is duty bound to turn out a product that has appeal and utility.

2. He must analyze the buyers' territory to see whether or not he can afford to sell in that territory. It may be that the cost of selling will be so high that he cannot afford to go into it and make a profit.

3. The importance of properly manning a sales organization. It is

### A RESOLUTION

"That the National Warm Air Heating Association recommend to its membership that they cooperate with the sheet metal contractors in an effort to place furnace selling agencies only with reliable, capable furnace installers."

the salesmanager's job to find out where the prospects are and how best to interest them in the articles offered them.

Too many people try to sell where even if they succeed in getting the business, they can't make a profit. These people can't seem to see that price is not the only thing to consider. The companies that are leaders have the highest prices.

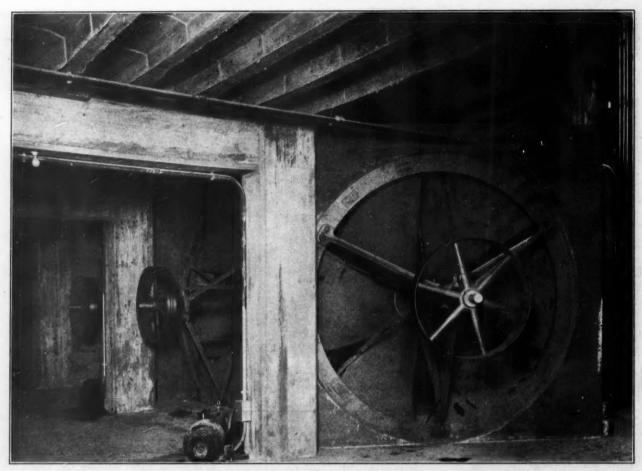
"Most people," said Mr. Burrus, "know nothing about courtesy in business, and yet an adverse public opinion is the worst competitor a man can have.

"A man should take the trouble to find out all the methods of creating favorable public opinion. Analyze the mail order house sales methods. They are studies in merchandising and stack away above the tactics of the average retailer who can't find anything to say about the product when he has the customer before him in person.

"Look for the points of value in your merchandise, then point these out to the customer. If your customers are buying, find out why. If not, find out why not."

Mr. Burrus made an impassioned plea for the men to fight the chain store method of merchandising as though it were the plague. He said this method is taking men back to serfdom. There never was a time when men had a better opportunity to succeed in business, but they have got to get on their toes if they want to remain in business. Creative genius must be free and independent. And the business man must have imagination with common sense.

Mr. Burrus ended his splendid talk with a recitation of the poem by Malone which is in answer to Engles poem on "Opportunity Knocks But Once." What a pity it is that every warm air furnace manufacturer and dealer in the country could not have heard the talk by Mr. Burrus! The standard of the warm air heating business might soon be raised to a much



Fan Room at Butler Field House, Butler College, Indianapolis, Indiana, Showing the 3 10-Foot Fans Which Force the Air Over the Three Warm Air Furnaces Used to Heat the Building and the Swimming Pool

higher level. Let's hope they bring him to Columbus in December.

### Tuesday Afternoon

At the afternoon session the St. Clair Foundry, Schill Brothers and the Peerless Foundry Co., together with numerous dealers were voted to membership. Communications were read from David Kinley and M. S. Ketchum, President and Dean of Mechanical Engineering, respectively, of the U. of I., from "Buck" Taylor, and from the American Fair Trade Association.

The Managing Director's report was made by Allen W. Williams, showing briefly how extensive the activities of the association are becoming.

K. S. Richmond, St. Louis, gave a very instructive talk on the future possibilities in the domestic furnace stoker field. The small stoker for the domestic warm air furnace is the coal industry's answer to the oil burner and the gas fired warm air furnace.

H. B. Johns, of the warm air fur-

nace department, Peoples' Gas, Light & Coke Co., Chicago, presented a very instructive illustrated lecture on the gas-fired warm air furnace. This included an explanation of how gas is manufactured from

The approximate costs of firing with gas were stated to be about \$40 per room per season or about 50% more than coal. Insulation reduces the cost about 20%.

Mr. Johns stated that with a good standard code installation the cost of heating is about 10% less with warm air than with steam and hot water system. About 30% of the installations made by the gas company in the Chicago area are warm air installations.

Insufficient cold air and insufficient draft are among the troubles most generally encountered, according to Mr. Johns.

A trip was made to the Butler Field House where the heating plant was inspected. E. K. Campbell of the company which bears his name has explained the heating requirements of the building as follows:

### Delegates Inspect Butler Field House Heating Plant

The following description of the heating plant in the Butler Field House, Indianapolis, Indiana, which was inspected on Tuesday afternoon by the members of the National Warm Air Heating Association in attendance at the Indianapolis meeting, was given by E. K. Campbell, head of E. K. Campbell Heating Company, Kansas City, Missouri:

"The heating plant proper consists of three No. 7736 E. K. Campbell steel plate heat generator each having 19.6 square feet of grate surface, 734.6 square feet of heating surface, giving a ratio of 1 to 36.9.

"In addition there is a large steam boiler heating water for the swiming pool and shower baths and furnishing steam for unit heaters in the vestibule. On the smoke outlet of this boiler is a large economizing drum containing 734 square feet of heating surface and the smoke of the boiler must pass through this economizer before going to the chimney.

"The accompanying drawing shows the main warm air riser contains 500 square feet area. It also shows the return air drop containing 400 square feet area. The other 100 square feet return air is brought from the gymnasium and swimming pool rooms.

"The section A-A shows the warm air riser discharging up near the roof from a single point.

"The three furnaces and the steam boiler and its economizer are housed together. The air is blown through this housing over the furnaces, over the economizer and over the boiler, which is not covered, by four fans each 10' in diameter,

driven by a 10-horse power motor and moving, according to anemometer test, 358,180 C. F. M.

"The total cubical contents of the building is 5,149,906 cu. ft., divided into 3 rooms. The swimming pool contains 192,000 cubic feet, the gymnasium 384,000 cubic feet and the Field House proper contains 4,573,906 cubic feet. The system, therefore, is designed to recirculate the air of the building approximately every 12 minutes.

"On a recent cold weather test with a thermometer outside at the beginning of the test, according to government reading at 5 below zero in the morning and 8 above zero at the close of the test at night. Thermometer readings were taken at different levels and scattered over the building.

"The temperature variation on a

grain level was 1 degree at the 6" level, 3 degrees at the 5' level, and not more than 3 degrees at any other level.

"The temperature difference up and down was 7 degrees in the first 15'; no difference in the second 15'; 3 degrees in the third 15' and a total of about 12 degrees difference in 83'—an average of 1 degree difference in temperature for every 7' in height.

"The coal consumption on this test, running from 8 a. m. to 8 p. m., with the unofficial temperature on the north side of the building at the beginning of the test, of 12 below and the government temperature of 5 degrees below zero, and an average government temperature of the day of zero, was 9,000 pounds of coal with a theoretical B.t.u. value of 125,685,000.



View of the Gymnasium at Butler Field House, Butler College, Indianapolis, Indiana, Which Will Give the Reader Some Idea of the Immensity of the Task Which the Three Warm Air Furnaces Have to Perform. Note the Height of the Structure and the Large Quantity of Structural Iron Work Which Must Be Heated. The Big Warm Air Duct Is Shown in the Center of the Room

"Measuring the volume of air and recording the return air temperatures and the discharge temperature at the warm air grill, the heat put into the building in that length of time was 115,727,728 B.t.u., or approximately 92% of the heat in the coal.

"Two such tests were made, agreeing almost exactly in the efficiency results.

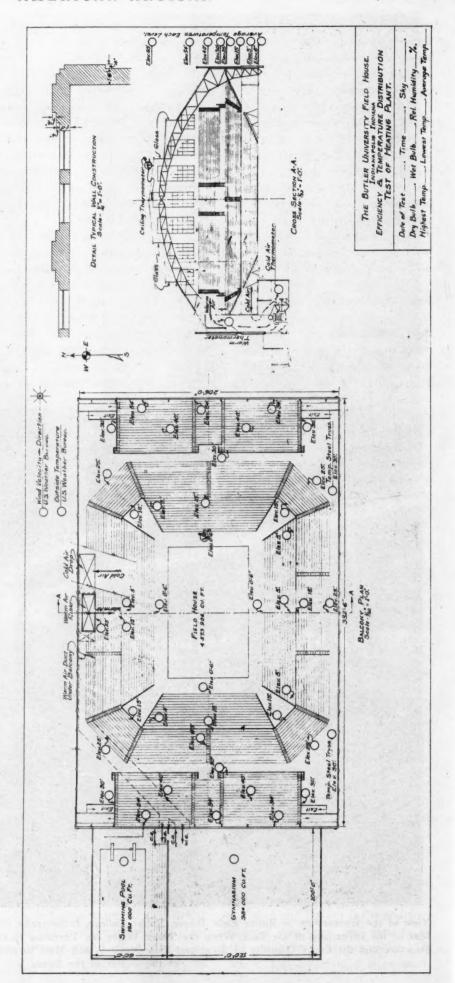
"This plant was designed by John M. Robertson, manager of the St. Louis office of the E. K. Campbell Heating Company, who also superintended and handled the installation all the way through and made the test above reported. He does not regard these tests as absolutely accurate, but they are approximately accurate, and show the value of the large amount of secondary heating surface in furnaces used for heavy firing in large work."

### Some Minor Changes in Standard Code

Wednesday morning Professor J. D. Hoffman, chairman of the code committee, explained several minor changes made in the code. These changes are all embodied in the sixth edition of the code, which is now released. Professor Hoffman stated that the code is now as nearly correct as it can be.

F. G. Sedgwick of the Waterman-Waterbury Company, Minneapolis, gave an excellent address on "The Installation and Use of Oil Burners in Warm Air Furnaces." Mr. Sedgwick in his address made some very important observations concerning the application of oil burners to warm air furnaces, and he was highly complimented upon it. The address is published in full on pages 74 to 78.

I. L. Jones, chairman of the Better Business Committee, outlined the work of that committee, stating that it was a co-ordinating body, working with the aim in view to determine how the association can be of service to the manufacturers and dealers alike. He stated that in its activities the committee intends to work from the hub out instead of from the circumference in.



The appointment of a special representative is one of the first works of the committee. Jack Stowell has delivered his talk before about 15 gatherings during this winter.

Then there is the mailing list, the preparation of a form of the standard code formula, the sketch sheet, the standard estimate blank.

It was also stated that regional meetings are being planned, and, in this connection, it is the intention of the committee to get talks in standard form so that local association secretaries can use them. The committee welcomes any constructive suggestions that dealers or manufacturers may have.

Tommy Richardson outlined the work of the Publicity Committee of which he is chairman. He enumerated the many ways in which information is being disseminated to dealers. Some of these include the Bulletin, the dealer booklet, the consumer booklet. Then there are the new portfolios, the new identification cards, the advertisements in Sweet's Catalog and in the Home Builders' Catalog, the furnace dealers' manual and an architects' folder.

Jack Stowell was put through his paces and showed the application of the standard code. In making this talk, which he has given before 15 other conventions during the past winter, Jack made many pertinent remarks about good practice as he went along. Some of these were as follows:

"The time to call the attention of the customer to a poor chimney is before the installation is made. The furnace installer should state 'reasons why' before installing and not alibis afterward.

"The installer must know which way the house faces so as to know how to apply the code 'extras.'

"It is also necessary to know the number of rooms in the house that have cold ceilings, because where cold ceilings are found, these must be provided for. It is important to know whether the attic is floored, and the type of construction must be determined.

"It is advisable to put in the sec-

ond floor stacks first, because there are always more places to put in the first floor ducts than the second floor.

"Bad drafts across the floors of the house can be avoided by making proper division of the system with regard to the location and size of the cold airs.

"It is essential to have an air space around a warm air pipe where it goes through a stone wall in the basement.

"It is necessary to use a transition piece in the cold air to connect cold air pan with round cold air duct.

"Dividers or baffle plates are often necessary to obtain proper balance in the system.

"To make money the furnace installer must get a price high enough to give him a 50% gross profit, and the installer should make himself a better salesman to do it.

The new code of the Board of Fire Underwriters will permit the heating of garages with warm air systems.

S. V. Dunckel, Chicago, gave a very instructive talk on "Furnace Costs." In this he proved by showing actual figures, that the greatest volume does not always mean largest profits.

He gave four rules for the good conduct of a business. These were:

- 1. Policy of business—Endeavor to make a profit on all business taken.
  - 2. Perfect an organization.
- 3. Product—See that the product is carefully made, well fitted, carefully packed and shipped.
- 4. Build up dealer confidence, so as to eliminate dealer turnover.

#### Election of Officers

The new officers elected were: President, James T. Trigg, Huntington, Ind.; first vice-president, Chas. Seelback, Cleveland; second vice-president, H. T. Richardson, New York; managing director and treasurer, Allen W. Williams, Columbus, Ohio.

The directors were, C. E. Hall, Indianapolis; R. W. Blanchard, Chicago; Clarence Olsen, Elyria, Ohio; A. W. Wrieden, Holland, Michigan.

A resolution was presented by J. Harvey Manny, member of the Better Business Committee, and passed by the association to the following effect:

"That the National Warm Air Heating Association recommend to its membership that they cooperate with the sheet metal contractors in an effort to place furnace selling agencies only with reliable capable furnace installers."

A banquet was held in the evening of Wednesday in the Hotel Claypool, which was on a par with the wonderful affairs of this kind the association puts on.

The remaining session of Thursday morning was devoted entirely to a review of the research work now under way at the University of Illinois. Professors Willard, Kratz and Quereau were on hand and the burden of their talks was concerned with the results obtained from the testing of fans.

As this material is not yet released by the University of Illinois, those men present will have the advantage over those who remained away from the convention; therefore it behooves everyone who can possibly do so to be present at the December meeting in Columbus, Ohio.

### W. A. Rummel Goes into Business for Himself at South Bend, Indiana

W. A. Rummel, formerly with J. C. Rummel & Son, 1124 South Main Street, South Bend, Indiana, is now in the warm air heating business under his own name at 2923 Mishawaka Avenue, South Bend, and is handling the Meyer Furnace Company products.

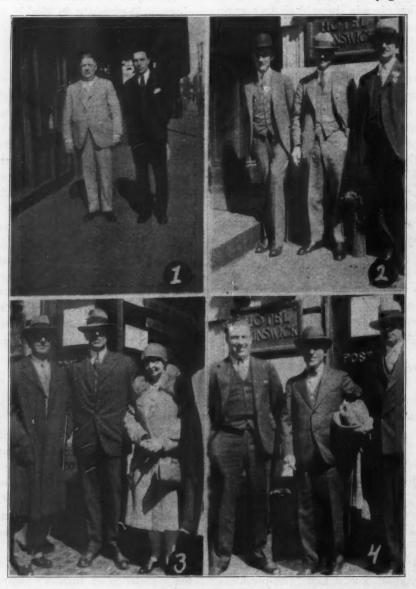
W. A. Rummel is well versed in the installation of furnaces according to the Standard Code method and is a thorough student of good practice. At the Indiana Sheet Metal and Warm Air Heating Contractors' Association convention in Indianapolis in January he had on display a warm air furnace fan idea that he worked out himself and developed.

### Lively Discussion on Overhead Dominates Pennsylvania Sheet Metal Convention

Compare Problems of Income and Furnish Exact Reports of Experiences

OVERHEAD and the proper ratio between productive payroll and overhead was one of the most argument provoking subjects 'discussed at the recent Pennsylvania Sheet Metal State Convention.

expense in conducting their business. These reports were read and commented upon and two of these tabulated reports — which were placed upon the blackboard in the hall—are shown on this page. A



No. 1—M. F. Lieberman and Jack Stowell. No. 2—E. A. Scott, Louis Luckhart and W. C. Markle. No. 3—Fred Hoefel, J. R. Cook, Mrs. J. J. Thomas and Mr. Thomas (almost). No. 4—I. E. Seith, L. G. Bross and A. E. Busch.

R. S. Hahn, of Easton, Pa., chairman of the Overhead Expense Committee, had collected reports from 12 different sheet metal contractors showing different items of

few of the items are omitted by the percentages at the end are correct as copied.

#### The Table.

Gross business ......\$27,000 \$31,205

Pay roll (money paid to those for whose service		
you made a charge)	6,930	10,330
Overhead	3,090	9,240
Rent		6,000
Insurance (all kinds)	384	408
Taxes	145	137
Advertising	361	200
Printing	35	
Telephone		163
Trade papers, etc	10	
Legal Ex	75	10
Dues to trade associa-		
tions charity	50	200
Shop supplies	90	126
Lost time for workmen.		530
Bad debts	300	190
Depreciation of tools and		
equipment	200	1,131
Carfare, delivery ex-		
penses, salary		4,900
Overhead is ?% of gross		
business Overhead is ?% of pay	44.6%	29.6%
Overhead is ?% of pay		THE REAL PROPERTY.
roll	11.4%	89.4%

This table shows two groups— The one whose figures are at the left is the experience of the Pennsylvania contractor with the least overhead. The column at the right shows the average experience of all of the 12 firms reporting.

We note that the low man does not charge himself any rent or salary and it is due to these two as well as other omitions that his overhead is brought down to only about 11% of his payroll while the overhead of the average was nearly 90% of the payroll.

#### The Discussion.

The percentages mentioned in the reports of the 12 contractors varied quite remarkably—but most of the contractors seem to report that productive labor constitutes about 80% of the total payroll and that overhead is about 25 to 30% of the gross business.

The discussion that followed Mr. Hahn's talk showed the extreme interest being shared by all in the subject of overhead.

Representatives from various localities differed in their opinions and one man felt sure his percentage was nearer to 50% than to 80% and brought forth two comments one that his locality must be unusually favorable and the other that perhaps he fails to include all proper items under overhead.

#### Overhead Increasing.

"My overhead is increasing 2 to 3% every year," says Mr. Hahn. This is due to the increased service demanded by our customers which means a greater cost of installation and service seen thereafter.

#### The Point at Issue.

The final charge to make to a customer for work accomplished is the point at issue in all this discussion about overhead.

If your man worked on a job for one hour and you pay him \$1.00 an hour and your overhead is 80% of your payroll then your cost on that job would be \$1.80. If you want to make 15% on the business, then you would charge \$1.80 plus 15% or \$2.07 for the job.

If your overhead is only 50% of the productive payroll then you would charge \$1.50 plus 15% or \$1.72½.

The great message which the associations are trying to put over is that every man has overhead and that overhead is usually larger than a man thinks it is before he begins to keep books and puts down every item of expense. Also this overhead should be charged for when figuring on a job.

### Frank Bright, Decatur, Illinois, Has Something to Say About Furnace Salesmen

In reviewing AMERICAN ARTI-SAN I re-read the article by George Duerr on "Drawing Accounts for Furnace Salesman," in the issue of March 2, 1929.

Speaking from the standpoint of the man with a family to keep (which I have), it is not possible for him to make a good showing in his work without a drawing account for this reason: A man whose expenses are going on while he is trying to get started is bound to get in debt, and then when he does start to make some money he must use it to pay his bills, and cannot see that he is getting anywhere. Then he gets worried, and I always have contended that no

man is at his best when he is worried, whether it be one thing or another.

As I see the proposition, the drawing account is the manufacturers' and the dealers' only way to keep salesmen from getting the worry bug in their head.

I firmly believe that if the furnace dealers and manufacturers turers and dealers to see that their salesmen are given all the encouragement possible, and after all, what will any business amount to without salesmen?

I would like to hear some remarks on this letter, also on the following question:

Which would the manufacturer or dealer rather do, hire a man



No. 1—W. Rerb, I. J. Quinn, W. F. Angermyer and D. C. Boyer. No. 2—Chas. Schechter, Mrs. Francis Heidig, F. J. Heidig, M. J. Beithlez, Frank Schimff and F. F. Harmon. No. 3—A. J. Sabathne, E. F. Bordt, H. Sabathne, and H. G. Hartline. No. 4—Joseph Long, R. S. Hahn and J. C. Miles, No. 5—W. J. Cowern, Jr., H. G. Hartline and W. H. Scholen. No. 6—C. F. Lupold, W. A. Fingles and Art Lamneck.

would make it a point to learn all they can about their salesmen's economic problems and then try and eliminate the worry, it would pay bigger dividends than were ever paid before.

The furnace business is not a side line with me; it is more of an obsession, and I believe that there are more chances for advancement in this work than any other line. So it is strictly up to the manufac-

that claims to be a salesman for \$25 a week and get \$15 worth of work, or pay a man \$50 a week and get \$75 worth of honest production?

When all is said and done, you get just what you pay for in this old world, and I find that the company which has the most confidence in their product give their salesmen the best proposition. Thus they

(Continued on Page 79)

## Kentucky Sheet Metal Men Have Spirited Meeting at Louisville, April 8

Vote to Oppose 5-Year Guarantee on Roofing—G. W. Ackerman Elected President

THE Kentucky Sheet Metal Contractors' Association held their annual meeting at the Tyler Hotel, Louisville, Kentucky, Monday, April 8, 1929, President Cartwright presiding.

The first speaker on the program was Jack Stowell, special represen-

tion in the application of the Standard Code. This included a demonstration of the use of Table A of the Code and also the possibilities of insulation.

Work that Jack is doing is a part of the preliminary work that the National Warm Air Heating AssoThe three Kentucky colonels, Ferd Schupp, J. E. Merrick and O. E. Hutchison, were very much in evidence at the meeting.

Following Jack's address the minutes of the previous meeting were read and approved.

The resolutions and finance committees were next appointed.

Mr. Kemper of Louisville made the address of welcome.

President Cartwright of Bowling Green expressed himself as well pleased with the work accomplished by the association during the past year.

The secretary reported 45 members in Louisville and 29 members in other parts of the state.

There are about 133 more nonmembers throughout the state that are possible members, and the secretary asked for suggestions on how to get these men into the association.

Mr. Mattingly of Owensboro, past president of the organization, spoke on value to him of the organization. He felt, however, that greater interest could be aroused in prospective members out in the state.

The finance committee reported on the condition of association finances. This consisted of J. M. Mattingly, Louis Hecht and Mr. Hirsch.

J. M. Mattingly read a letter to the Owensboro mayor and the fire chief of that city, recommending the use of the Standard Code to reduce the fire hazard in that city. The state organization went on record as favoring such action by the Owensboro Sheet Metal Works.

O. E. Hutchison spoke on how to improve business. Must have trust in one another before anything can be done in a constructive way.

J. E. Merrick recommended that the state body work for a state law



Group of Kentucky Sheet Metal Folks Enjoying Themselves at Party Given by Alice Hutchison

tative of the National Warm Air Heating Association, who outlined the work which the National is doing to make better business for the warm air furnace installers. The charts which Jack unrolled created a great deal of interest, and the audience received first hand instrucciation is doing preparatory to entering a regular plan of education for warm air furnace installers.

Three things which stand out as essential to success in business, according to Jack. These are quality, profit and telling the world about it.

putting the Standard Code upon state statute books.

Mr. Merrick stated further that sheet metal men must wake up to the fact that great changes are coming over the sheet metal industry, and if the contractors are not aware they will be forced out. There are too many contractors that have gone crazy over volume. The increase in volume also increases overhead and often eats up too much of the profits.

Large scale production will increase the profit where the market is assured, not otherwise. Volume alone will not do the trick. The contractor must figure his jobs on the basis of his costs and not according to a guess of what the competitor's bid is going to be. The sheet metal man is rendering a real service to the public and he has a right to expect a profit for his work. Bid peddling must come to an end before conditions in the industry can be improved. The big problem is to convert bid peddlers and make them see the error of their ways. A trust in one another must be established.

The association went on record as extending a vote of thanks to the National Warm Air Heating Association for sending Jack Stowell to talk to them about warm air heating.

G. M. Ackerman, Calhoun, Kentucky, spoke on the value of making your first price your last and only price. The best way to do is to keep out of contract business, establish a reputation for doing good work and build a business on that basis.

Ben F. Hirsch, Richmond, Kentucky, has found in his own business that a business man must know what his costs are before he can begin to make profits. He talks buying state manufactured goods when fighting mail order competition.

O. E. Hutchison discussed the subject of roof guarantees. He stated that when the architect specifies the material and the method of installation, no guarantee should be binding on the contractor. He

made a motion that the one year guarantee on material for roofing be maintained. The association is opposed to 5-year guarantee.

Mr. Mattingly stated that he did not see how any contractor could conscientiously put a guarantee on anything for more than a year, and then only on the labor end of the work.

The election of officers resulted as follows:

President, G. W. Ackerman, Calhoun; 1st vice-president, Albert Fink, Louisville; 2nd vice-president, Louis Stottman, Shepardsville; 3rd vice-president, Jake Bailen, Louisville; treasurer, L. H. Harpring, Louisville; secretary, L. D. Stiglitz, Louisville.

The directors elected were John Cartwright, past president; J. M. Mattingly, Ferd Schupp, Charlie Schott.

The delegates elected to attend the national convention in Baltimore were: J. M. Mattingly, L. D. Stiglitz, Ben F. Hirsch. The alternates were: G. W. Ackerman, J. V. Kemper, O. E. Hutchison.

If for any reason any of these men cannot attend the national convention, the board of directors have the power to appoint someone to go. The idea is to insure at least three delegates at the national convention

The board of directors are to be given the power to determine the amount of money the delegates are going to be allowed for expenses to the national convention in Baltimore.

A banquet was held in the Green room of the Hotel Tyler in the evening.

### J. M. & L. A. Osborn Co., Cleveland, Establishes Detroit Warehouse

The J. M. & L. A. Osborn Company, of 1541-51 East 38th Street, one of the pioneer jobbing houses of Cleveland, announce this week the opening of a new branch warehouse at 6578 Gratiot Avenue, Detroit, Michigan.

The Osborn Company manufacture eaves trough, conductor pipe, etc., and distribute everything used in sheet metal work, and this Detroit warehouse is the second branch they have established within the past few years.

In February, 1926, their Buffalo branch commenced business, and on May 1st of last year a large addition was also added to this warehouse.

Besides all of their old employes in the Michigan territory, who will now work out of the Detroit branch, several new men have been added to their organization, all of whom have had considerable experience in the sheet metal line in the City of Detroit.

The Detroit branch will be under the direct supervision of A. W. Howe, secretary of the company, who for the first few months at least will spend considerable time in that city.

Their warehouse was opened and ready to do business Monday morning, April 1st, and it is a strange coincidence that this is exactly seventy years from the Osborn beginning in Cleveland.

### Carnegie Institute to Teach Sheet Metal and Welding During Summer

The College of Industries of the Carnegie Institute of Technology, Schenley Park, Pittsburgh, will give six-weeks' courses in sheet metal work and woodworking, cabinet-making and machine shop.

Courses in oxy-acetylene welding for teachers and supervisors of industrial education will be given during a six weeks' perior between June 28 and August 9 at the twelfth summer session.

Although the courses in these subjects are outlined primarily for the benefit of teachers and supervisors, the announcement points out the work is designed to have a special appeal to undergraduates and others who feel a need for more technical training.

The National Association of Sheet Metal Contractors will hold its convention in Baltimore in June. "Npff said." Let's god

## Sedgwick Burns Midnight Oil Collecting Data on Oil Burner Question

Answers to His Questionnaire Say Oil Burners Are Satisfactory in Warm Air Furnaces Designed for Coal

I<sup>T</sup> has been said, and I think truthfully, that philosophy precedes all advancement.

The philosopher gazes at the stars and draws conclusions which seem to him to represent correct deductions from what he sees. The philosopher dreams of the ideal STATE and sets down his conclusions to which he has been led by his observations.

It is left for the engineer to start where the philosopher left off and to prove or disprove the conclusions to which the philosopher has arrived.

I want it plainly understood that this is not an engineering discussion. As far as I can find there is not available sufficient engineering data from which engineering conclusions might be arrived at to prove or disprove the opinions that are held by so many people concerning the adaptability of many types of oil burners that are to be found on the market today to the many types of warm air heating apparatus.

As a matter of fact in presenting this subject to you I feel something like I imagine the tenderfoot must have felt when he went West to visit his father's ranch.

Our tenderfoot friend, the pampered son of a rich father, so the story goes, was sent out by his father to look over the ranch property in the "wild and woolly" West.

It appears that the ranch was located sixty miles from the nearest railroad station and that a long overland journey was necessary to reach it.

Our tenderfoot friend, of course, had visions of a delightful motor ride, and at the same time the boys on the ranch were anxious to give Father's boy a rousing welcome and send back the best possible impression of the conduct of affairs at the ranch.

The train pulled in, the delegation of the ranchers stood anxiously by waiting for the tenderfoot's arrival, but it so happens that there is no automobile road to the ranch and that the custom in that country is to ride horseback.

THE first Oil Burners made were like the first radio sets—correct in principle—but those first efforts are obsolete.

Today the Oil Burner is much improved and more of them should be sold by the warm air furnace installer.

After the welcomes are over, our tenderfoot friend asks what provision has been made to take him out to the ranch. The ranchers replied, "We have brought a horse."

With visions of what he would be like after sixty miles of riding, our friend expostulated with the crew, saying that he has never ridden a horse and that some other arrangement will have to be made. The story goes that these simpleminded folk went into a huddle and talked seriously for some little time. Finally their faces brightened up and they came back with this report: "We thought the situation was serious, but we finally have reached a solution. You have never ridden a horse, so we have brought out a horse that has never been ridden before. We will make it 50-50."

This paper by
F. G. SEDGWICK
was read to the

National Warm Air Heating Association Convention

It is highly interesting and instructive. Read it and then tell us about your experience with Oil Burners. —Editor

This illustrates to a certain degree how I felt when I was assigned this subject. I have never been asked to discuss oil burners before, but so far as I can learn oil burners have not, recently at least, been discussed at the meetings of the National Association, so it is 50-50, and here goes.

### Questionnaire Sent to Manufacturers

Thinking that I might get a running start, my first impression was to get the opinions of the furnace manufacturers and the oil manufacturers on the subject assigned me, so I sent a questionnaire to all of the furnace manufacturing members of the Warm Air Heating Association and to all of the principal oil burner manufacturers whose ads appeared in one of the leading oil burner journals.

The replies to this questionnaire were both disappointing and illuminating, disappointing in that they showed that most of the furnace manufacturers and most of the oil burner manufacturers did not know any more about the subject than I did, and illuminating because the replies showed almost conclusively that it was the opinion of those addressed, both furnace manufacturers, that oil burners when used in warm air furnaces as constructed for burning coal are satisfactory.

I am not going to attempt to tabulate nor to read the replies to these questions. Much that I will say is based upon the answers to the questions, and at this point I want to take the opportunity that is offered me to personally thank each and every one of you who was kind enough to contribute to this discussion by filling out and re-

turning the questionnaire. I appreciate the assistance that was thus given, and particularly the assistance of some few who have evidently made a deeper study of the oil burner situation than most of us.

I also want to say, so that I will not be misunderstood, that nothing that I shall say shall be considered as derogatory to warm air as compared to other forms of heating. While I am convinced that much improvement is possible in the construction of furnaces for oil burning, I am equally sure that as much improvement is possible in the construction of other types of heating apparatus for oil burning.

What I particularly want to do is to bring this subject as I now see it out in the open where it will be given the position to which the furnace business is entitled, and I think I will show you before I am through that the principal trouble with the oil burner as it has been related to furnaces is that too little thought has been given to it by the industry as a whole.

In order to prevent misstatements due to the carelessness to which I am addicted in speaking without notes, this will be a paper-not a talk-and I hope that I may thereby be relieved of saying to myself what Jonah is said to have remarked to the whale after he found himself free on the mighty sands of the beach. It ought not to be necessary for me to tell the group of gentlemen what it was that Jonah said, but for fear that some here might not know, I shall tell you that as soon as Jonah regained his feet he turned to the whale and derisively shaking his fist at the monster, said: "After this maybe you may know enough to keep your mouth shut."

First I want to briefly go over the questions that were asked in the questionnaire, because to me they represent those things in which we should be interested.

Question No. 1—Is it practical to use oil burners in warm air furnaces as now commercially made for coal? If not, why?

It was the opinion of all but one who answered this question that it is practical to use oil burners in warm air furnaces as now commercially made for coal. Some furnace manufacturers and some oil burner manufacturers qualified their replies by stating that the furnace must be permanently tight.

Question No. 2—What type of burner is best adapted for use in warm air furnaces?

It is evident that the majority prefer what is commonly known as the gun type of burner. The pot type of burner was almost as popular, and the so-called gravity burner was apparently not in favor, either, with the furnace manufac-

YOU are the logical man to install Oil Burners in Warm Air Furnaces. There is profit in doing so and loss of furnace business in not being able to supply the convenience of Oil Heat.

turers or the oil burner manufacturers.

I think the situation as it is applied to gravity burners is pretty well summarized by the following words from an address given by Mr. C. H. Chalmers, former president of the American Oil Burner Association, and published in one of the Oil Burner Journals in January, 1924. Mr. Chalmers said:

"Natural draft burners have one strong feature—they are cheap. Many persons are willing to use them; thousands of homes find them superior to coal; often they are replaced by the full automatic machines which represent the best the world has to offer, unless we can buy gas at half the price or get electricity for about 1/10 of the usual cost."

In many instances the natural draft burner is successful, but it naturally depends upon flue draft for proper combustion. Flue draft is variable and, therefore, it is frequently difficult to obtain a proper mixture of air and oil with a natural draft burner. This is why some of them work wonderfully well and some are not satisfactory.

Question No. 4—Is noise more objectionable on furnace installations than on hot water or steam?

The majority of those answering this question said that it was. A second section of this question asked whether noise was such an objectionable feature as to make it inadvisable to use oil burners in warm air furnace installations.

Only one furnace manufacturer thought that the noise was so objectionable.

An oil burner salesman expressed this noise problem in about the best way that I have ever heard it expressed. He said that his competitor's burner was so noisy that the neighbors objected to it when they came into the house, but that his burner was so quiet that even the neighbors did not hear it.

The noise in an oil burner is simply a comparative proposition. People think they are going to object to it, but soon get used to it and can not tell you how many times a burner has gone on during the day.

Then, too, there are many oil burners that have recently been developed that are so quiet that approximately the only noise that you get is the noise of the running of the motor, which surely would not be objectionable even with a warm air furnace.

Question No. 4 asked whether the fire hazard was greater when oil burners are used with warm air furnaces.

The answers to this question were unanimously NO, both on the part of the furnace manufacturers and the oil burner manufacturers.

Question No. 5 asked whether radiant heat from oil burners stopped or retarded the flow of cold air through cold air shoes at the bottom of the furnace casings.

The opinion seemed to be about equally divided on this subject. I shall have more to say about it later on.

Question No. 6 asks whether there is any greater likelihood of leakage of oil fumes or gas with a warm air furnace installation than with hot water.

Seven furnace manufacturers and twelve oil burner manufacturers answered this question in the affirmative, and it seemed to be the general opinion that great care should be exercised to see that the furnace installed.

Question No. 7 asks what type of furnace is best adapted for use with oil burners.

The intent of this question was to draw remarks about combustion space, radiating surface, etc., but practically everyone who read it seemed to divide furnaces into two classes—sectional and non-sectional.

In the answers to this question many placed emphasis on the necessity for tightness and for greater heating surfaces.

Question No. 8 asked for opinion as to minimum stack temperature and maximum stack temperature in oil burner installations.

These answers varied from 100° F. as the minimum up to 1000° F. as the maximum. The average minimum recommended by the furnace manufacturers was 377° and by the oil burner manufacturers 322°. The average maximum recommended by the furnace manufacturers was 590°, and by the oil burner manufacturers 560°.

The next question asked what stack temperatures are usually encountered in oil burner installations.

The furnace manufacturers thought that they varied from 500 to 1,000 degrees, and the oil burner manufacturers stated from 250 to 800 degrees:

Question No. 10 asked whether it is possible with warm air furnaces now on the market to burn oil as economically as in the average hot water installation.

The majority of the manufacturers reply to this question answered it "YES," and one oil burner manufacturer said, "Yes. if a fan is used."

Question No. 11 was an attempt to find out whether there is any opinion as to desirable ratios of heating surface to grate area in a coal-burning furnace that is to be used for oil.

So far as I could learn there was very little that could be gained from the replies to this question.

Question No. 12 was a similar question and asked how many sq. ft. of heating surface there should be in reference to the B. T. U. capacity of the oil burner.

Only one furnace manufacturer answered this question, and he said that the furnace should have 69 sq. ft. of radiating surface per gallon of oil. The balance of the replies were of no help to us.

Question No. 13 asked whether the flue surfaces in oil-burning furnaces should be easily accessible for cleaning.

Question No. 14 asked regarding efficiency, and the answers to this question were not such as to be of help to us in this discussion.

Question No. 15 asked for a description of an ideal warm air furnace for oil; what its main characteristics would be considering combustion space, heating surface and ratio of prime heating surface to secondary or flue heating surface.

The few replies received to this question seemed to indicate that for an ideal installation there should be a much larger ratio of heating surface than is commonly used in coal burning furnaces, and that this should be equally divided between prime and secondary heating surfaces.

It is estimated that there were approximately 110,000 oil burners installed in the United States in 1928. Mr. E. Earl Newsom, assistant director of Oil Heating Institute, in a letter to me dated April 2, 1929, stated that they had no information on which to base an estimate as to the number installed in warm air furnaces, but that he would guess that it would be at least 30 per cent, or a total of 33,000 oil burners installed in warm air heating systems in the year 1928. Surely, it is up to us to know as much as we can about this problem.

It appears that our problem auto-

matically resolves itself into two distinct parts. The first part has to do with the use of oil burners in warm air furnaces commercially built for use with coal, and this in my opinion represents, by far, the major part of our problem. The second part has to do with the construction of an idealistic furnace to give maximum economy with oil without regard to the possibility of ever converting the furnace into a coal-burning furnace.

I am going to devote most of my time to a discussion of the adaptability of furnaces built primarily for burning coal for use with oil burners.

On page 19 of the 1926 issue of the *Handbook of Domestic Oil Heating*, issued by the American Oil Burner Association, the following statement appears:

"Oil burners may be installed in practically any hot water or steam boiler or gastight warm air heater that is in good condition and perform, if properly installed and adjusted, with satisfaction."

I thoroughly believe this statement to be true, and while, where oil burners are installed in coal burning furnaces, we do not get ideal conditions, we do get conditions that are reasonably good, and in warm air furnaces as commercially built for coal I believe that there is no reason why the oil burner should not be just as successful as in a hot water boiler if the furnace is tight.

But even if my opinion is not correct, it is true that a great majority of oil burners now being installed are being installed in furnaces originally designed for coal, and that this policy is one to which the oil burner industry itself seems committed and one which we will have to meet as best we can.

### Discuss Type of Burner Best Adapted for Warm Air Furnaces

The question as to what type of burner is best adapted for use in warm air furnaces depends entirely upon the furnace and upon the burner and upon the flue draft and upon a number of other factors that cannot be considered here. I think, however, that any burner that will give good results in the ordinary domestic heating plant will give good results in a good warm air furnace.

There is a very definite need for proper controls in connection with the warm air furnace installation, and these controls have been developed and are reliable. There is a very satisfactory control to prevent the over-heating of the furnace. This control, which shuts off the burner when the temperature in the main leader pipe gets too high, is installed in the main leader pipe far enough away from the furnace to minimize the radiant heat effect and yet close enough to the furnace to fairly accurately register the bonnet temperature. In installing such a furnace the warm air damper should be left out of this pipe and the louvres should be removed from the register and the controlling mechanism should be installed in the leader pipe from two to three feet from the point at which it leaves the furnace bonnet.

#### Installer Cannot Be Too Careful in Locating Burner

Warm air furnace installers must carefully weigh the possibility of radiant and convected heat effect on the coal air supply. Many of the burners are installed in the ashpit and some burner installers are careless in locating their burners too low. It must be remembered that the ideal behind the construction of a warm air furnace built for coal is that the radiating surface should start at the grate level. With an oil burner installation the radiating surface frequently starts at the bottom of the furnace.

Where a burner is installed in the ashpit, it should be installed as high as possible in the ashpit, and the ashpit walls must be carefully lined. I recommend for this purpose 2 in. of asbestos cement and at least one layer of firebrick set into this cement. If there is room in the ashpit, two layers of firebrick would be better, and as many as three layers may be used at the point of impact of the flame in a gun type burner.

If such a lining of the ashpit is .

insufficient to overcome the radiant heat effect, radiation shields should be installed in the casing between the cold air shoes and the casing. The height of this radiation shield from the floor should equal the distance of the radiation shield from the furnace body. The shield should preferably be constructed of black iron.

#### All Joints Must Be Sealed Tight

I believe there is a greater likelihood of leakage of oil fumes in a warm air furnace installation than in a hot water installation, unless welded steel construction is used, and in the case of sectional furnaces particularly great care should be taken to see that all joints are sealed tight.

No installation should be made in an old furnace without a com-

OIL Burners today will give satisfaction in connection with warm air heating if properly installed in properly prepared warm air furnace installations.

plete dismantling and resetting of the furnace. Any other policy would lead to serious trouble. I have known of cases where leakage was such that vaporized oil was passed through the furnace pipes into the living rooms and seemed to condense on the furniture so that there was a film of oil that was plainly apparent on the household furnishings. A warm air furnace dealer making such an installation would be liable for very serious damages which might jeopardize his profits on many a furnace installation.

The furnace can not be too tight for an oil burner installation, and the tighter the furnace, the more satisfactory will the job be. As a manufacturer of welded steel furnaces I am afraid that any stronger remark on this subject would be considered by some as biased, so I leave it to each individual within my hearing to be his own judge on this point.

Too much has been said about

stack temperature. I was surprised when one oil burner manufacturer told me that the stack temperatures with a coal burning furnace would frequently run as high as with an oil burning furnace, and so I went and looked this matter up in the tests reported in Bulletin No. 141 as published by Professor Willard and his staff, and I found stack temperatures reported in those tests as high as a thousand degrees. The highest that I noticed in a quick examination of the figures was 1,050°. Without averaging all of the tests, it seemed to me that they average somewhere around 700 to 800 degrees, and the lowest that I found was 355°.

When you consider that the coal burning furnace operates for 24 hours per day, and the oil burning furnace for perhaps six to eight hours a day, you can quickly see that the problem of stack temperatures with the oil burning furnace is not so great as we might think.

In my opinion stack temperatures should not be allowed to drop below 400° except where flue conditions are ideal, and a maximum of 600° is allowable.

My opinions are based on two things. First, if the stack temperature at the smoke outlet of the furnace drops below 400° there is danger that the temperature of the products of combustion in the stack may drop below the point of condensation in the chimney, resulting in a deposit of moisture which may become very disagreeable. Particularly with gas furnace installations, I have seen chimneys utterly ruined by such a deposit.

In the second place, a certain amount of heat is necessary for proper draft, and proper draft is necessary for proper combustion. I do not think that stack temperatures of from 400 to 600° are at all alarming with an oil burner installation.

Up to this point, then, you will see that I have arrived at a conclusion, namely: That any good oil burner will give good service in any good warm air furnace, provided the furnace is tight and the job is properly installed.

The first step that should be made by the furnace dealer is to see that the job is a Standard Code job and that the furnace is easily large enough to do the work which it would be required to do. An oversized furnace is even more desirable with an oil burner installation than with coal, for an over-sized furnace will pay dividends to the user in oil saved

The second step is for the dealer to make absolutely certain that the furnace is tight.

The third step is to properly insulate the ashpit if the burner is to be installed in the ashpit, so that the heat in the cold air shoes will not stop the flow of air.

And finally, I recommend, with some types of burners, the building of a brick work construction inside of the furnace body to properly deflect and retard the travel of the oil flame and to supply a heat storing reservoir wherever an intermittent type of burner is to be used.

You will notice on the wall behind me a drawing showing how I think a furnace should be prepared for a gun type burner. I want to call your particular attention to the ashpit installation and the beehive brickwork construction on the inside of the furnace body.

I believe that this furnace has been as intelligently prepared for use with oil as fuel as it would be possible to prepare a furnace for a gun type burner.

And now I am going to devote just a few minutes to the second phase of our problem—

#### THE CONSTRUCTION OF FURNACES, PARTICU-LARLY FOR OIL

My study of this subject and of the answers to the questionnaires which were submitted indicates to me that it is possible to obtain almost ideal efficiency at the bonnet with a furnace properly designed for the burning of oil.

My opinion is that such a furnace should have liberal combustion space. Greater combustion space, greater combustion chamber volume is required for oil than for coal, because gases from oil are further advanced in their travel through the furnace before the necessary air mixture has arrived.

I believe that the ideal warm air furnace for oil burning should have a considerably higher ratio of heating surface to grate area than is practical with coal. These heating surfaces should be in the form of long tubes so arranged as to set up enough turbulence so that the hot gases will impinge against the sides of the tubes, but with comparatively low resistance. I believe that in such a furnace the ratio of prime radiating surface to secondary heating surface should be about 40 to 60, and to promote ideal efficiency such a furnace unit should be planned for use with a fan.

I believe that such a furnace should be so built as to be absolutely and permanently gastight, and that all flues should be easily accessible for cleaning.

I understand that there are furnaces now built that approach this ideal.

I hope that in this discussion you will find something that will indeed be valuable to you, something at least that will set you to thinking about this problem.

I am sure of one thing and that is that if the warm air industry wants to participate in the business that is being done by the oil burner people they must understand the problem, and they must insist that every furnace in which a burner is to be installed be properly prepared for that installation. Dealers should particularly beware of the temptations to recommend oil burners to overcome difficulties that have been experienced with coal-fired furnaces.

My recommendation to each dealer is that he make it his duty to get in touch with the oil burner dealers in his locality to acquaint them with the needs and possibilities of the warm air furnace phase of his problem, and I believe that any work that is done along these lines will repay the dealer handsomely.

Let's take a positive and not a negative position in this matter.

#### Kerosene Burners Operate New Type of Refrigerator

A new type of household refrigerator which uses the heat from kerosene used as fuel in burners somewhat like those on oil cook stoves, is now being marketed by one of the large oil stove manufacturers.

Although this device gives results comparable to those of mechanical refrigerators, the oil-burning refrigerator is not in a strict sense of the word a mechanical device, for it has no moving parts.

The refrigerator is designed especially for use in home that do not have central station electricity, and, therefore, should prove a great boon to rural housewives.

The ordinary size of this new type of refrigerator, with 5 cubic feet of food storage space, uses just a little more than a pint of kerosene daily for the generation of refrigeration.

A small glass container holding the required amount of kerosene is filled once a day, inserted in the heating unit, and the burners are lighted. This quantity of kerosene keeps the burners in operation about an hour and a quarter and at the end of that time they extinguish automatically, after having generated sufficient refrigeration to last 24 to 36 hours.

A connection of a coil built into the condenser tank with a cold water supply line is necessary so that cooling water may be circulated during the short heating period.

Distribution of these refrigerators this spring will be extended to all of the states east of and including the Dakotas, Nebraska, Kansas, Oklahoma and Texas.

The kerosene oil-burning refrigerator is known as the Superfex Oil-Burning Refrigerator and is being manufactured by the Perfection Stove Company, Cleveland, Ohio, which for the past 40 years has been one of the largest manufacturers of oil-burning household devices in the world. Authorized dealers appointed by the manufacturer deal directly with the factory.

#### Catch 'Em Young and Train 'Em Only Solution to Drawing Account-Salary-Commission Problem

Most Salesmen Not on Job Early Monday Morning and Late Saturday

By R. W. STRONG, Homer Furnace Company

I HAVE noticed in two recent issues of AMERICAN ARTISAN comments from different manufacturers regarding ways and means of handling salesmen, with relation to their drawing account and commission account. It is my thought that most of the manufacturers will agree that it makes very little difference at the end of the year whether your men have traveled on a drawing account and commission basis, a straight drawing account basis, or a straight commission basis, but the crux of the whole situation is just this: "It all depends on the man."

We have found out in our experience over the past number of years that no matter how dismal a failure a man was on our sales force, he was always able, upon his own recommendation, to get a job with some competitor of ours, where he, of course, repeated the egregious fiasco. This only goes to prove that if sales managers were really on their toes, they wouldn't hire so many salesmen merely because the salesman himself said he was a great salesman, but would go much further into the thing and ask himself this question: "Why, if this man is such a wonderful salesman, is he looking for a job?" The answer is very apparent and the proper course of procedure is even more apparent.

We find that successful salesmen in any line, from selling hairpins to steamships, are not looking for jobs.

We solve the traveling salesmen problem by turning down all applicants who have had previous experience, and in their stead find young timber who, in the first place, know nothing about selling furnaces and who preferably have never traveled before, but who bear a reputation from the time they were first heard of up to the present of the most strict honesty and a parallel character reputation. Put these men, who might be farmers, gasoline service station attendants, grocery store clerks, or what have you, through a schooling of a month or six weeks during the dull period of the season and then start them out vim full and running over with only



R. W. Strong, Homer Furnace

the ideas of the house with whom they are working as to securing new business and putting pep into the old established business. Into them must be drilled everlastingly the thought that the only successful salesman is the salesman who works incessantly. Hours must mean nothing to him. On the job bright and early Monday morning and stay there until Saturday night.

We never yet in our history have been able to find an old experienced salesman, who claims to know all the tricks, whom you will find out on his territory Monday morning and still hitting the ball Saturday afternoon of the same week.

Summing the thing all up, it does

not make any difference how you compensate your salesmen because if they have failed to make good with the other concern, they will fail to make good with their present concern. If they made good with the other concern, they are still with them. Get them when they are young, educate them in the right way (some sales managers are still at sea as to what is the right way), and the matter of drawing account and commission will automatically adjust.

Mr. Strong has given his views on the subject. Let's hear from some more.

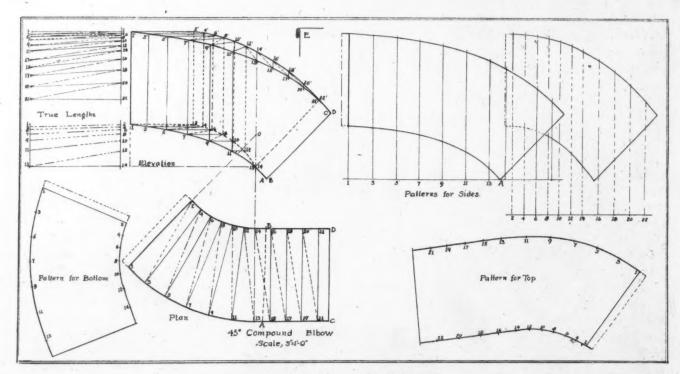
#### FRANK BRIGHT HAS SOME BRIGHT REMARKS ON SALESMANSHIP

(Concluded from Page 71) inspire their salesmen with that same confidence, therefore, their salesmen will work harder and longer to prove that the trust of their employer is not misplaced.

If a furnace dealer goes out and cuts the price under his competitor, you can bet that he is cutting his job some place. The same thing happens when a company has men working on a commission basis, then how can they expect their salesmen to get the business?

When I get a position with a furnace company or dealer, either traveling or local, which I will do at the first chance I get, I will prove that my statements are correct.

I am inclosing a stamp for your comments on this letter and you can use all or any part of it any way you see fit, as these are my convictions, which are only part of the many that I have learned in the past twelve years doing nothing but furnace work, both installing and selling.



Patterns for Compound Elbow Angle

#### Constructing a Pattern for a Compound Elbow Angle

Plan Worked Out by Cyril H. A. Markley, a Student

By O. W. KOTHE, Principal, St. Louis Technical Institute

WE ARE here showing a drawing sent by Cyril H. A. Markley, and it presents an interesting problem as well as demonstrates some of the fittings sheet metal men meet with. His text is as follows:

The triangulation problem selected is a 45 degree compound elbow.

The plan makes a turn of 45 degrees on the arc of a true circle.

The elevation is constructed so that the outlet is vertical and the lower opening is at an angle of 45 degrees. The bottom is horizontal in cross section, and this cross section must not be decreased.

To construct plan, erect a perpendicular to any convenient angle and, using point O as center, strike arcs 1-13 and 2-14. From O at an angle of 45 degrees to O-13 draw line O-1. From points 13 and 14 extend horizontal lines to the right. To locate the points A, B, C and D of plan it is necessary to construct part of elevation.

To construct bottom of elevation draw base line 13-14 and erect per-

pendicular from points H2 of plan to point 1' and 2' approximately in elevation. On these perpendiculars lay off the rise from 13 to 14, as 1 and 2, and the height from 1 to 1' and 2 to 2' of opening. Through 1 and 2 draw the dotted horizontal base line and through 1' and 2' draw the horizontal top lines.

Construct a line 13-21 equal in length to 1-1' and at an angle of 45 degrees with 14-13'. From 1 to 13 draw smooth curves for bottom of heel. Draw lines 13-A and 21'C perpendicular to 13-21' and of the same length.

Join A and C with a straight line and drop a perpendicular from 21', A and C to intersect horizontal lines extended to the right from 13 and 14 in plan. Divide arc 1-13 and straight line 13-21 into equal parts as shown.

From points 1, 2, etc., to 13 draw radial lines toward O until they intersect arc 2-14, and from points 13, 15, 17, 19 and 20 erect perpendiculars until they intersect line

14-22. Draw the dotted lines 2-3, 4-5, etc., and B-A. The dotted rectangle added at 1-2 shows the end of straight length beyond curve.

Erect perpendiculars from all points of division in plan to the height 1'-2' of elevation. From the points at which perpendiculars from 1, 2, 3, etc., cut curve 1-13 in elevation project horizontal lines to right until they intersect perpendiculars drawn from 2, 4, 6, etc., as shown.

Through these points draw a smooth curve to 14. This completes the base of elevation. Before constructing upper curves in elevation we must lay out pattern for sides.

The pattern for heel is constructed as follows: Draw a base line 1-A and step off spaces taken from arc 1-13 and line 13-C of plan. At these points erect perpendiculars to the height 1' of elevation. Some of these lines will be too long, but that cannot be helped. The unnecessary parts of these lines will be erased after elevation is finished. From the points 1, 3, 5, 7, 9, 11, 13

and A project lines to right until they intersect lines of similar number in stretchout. Through these points just located draw a smooth curve. Now set compass equal to height of elbow, as 1-1' in elevation, and keeping one leg on curve just completed, trace upper curve as shown.

This principle will keep the section uniform in size from end to end. From the points of intersection between new curve and perpendiculars of pattern extend horizontal lines to the left to intersect lines of similar number in elevation. Through these points just located draw curve 1'-21'.

The pattern for throat is developed in the same way, except the stretchout spaces are taken from arc 2-14 and line 14-D of plan, and the horizontal lines are projected to right from points 2, 4, 6, 8, 10, 12 and 14 of elevation.

After completing lower curve, the upper curve is constructed like that of heel pattern. The 2'-22' curve is found and finished like 1'-21'. The dotted lines in pattern for sides show shape and position of strips riveted on to sides of seams.

Before developing patterns for top and bottom it will be necessary to find the true length of dotted lines and solid lines of top, as shown in plan. The solid lines 1-2, 3-4, 5-6, etc., to 13-14 are shown in true length in plan and are equal on bottom. To find the true lengths of the dotted lines 2-3, 4-5, etc., to 12-13 a diagram to the left of elevation is constructed. Therefore erect the perpendiculars 14-2 and 13-1 so that the space 13-14 is equal to the length of the dotted lines in curve of plan. Project horizontal lines from points in elevation base curves to left to locate points 1, 3, 5, etc., 13 and 2, 4, 6, etc., 14 as shown. Join points 2 and 3, 4 and 5, 6 and 7, etc., to 12 and 13.

To develop pattern for bottom take 1-2 from plan and lay it down as 1-2 of pattern. Then with 1 as a center and compass set equal in radius to a space on lower curve between 1 and 3 of pattern for heel side piece, describe an arc through

3 and from true length diagram take length 2-3 and, using 2 as center, describe arc to intersect arc 3 at point 3. Then with 3 as center and radius equal to 3-4 in plan, describe arc 4. Now take space on lower dotted curve but one between 2 and 4 of pattern for throat as radius and 2 as center, describe arc 2-4. Continue this procedure until 13 and 14 are located, then add straight portion, as 13-A to 14-B in elevation.

The pattern for top is developed in the same way except that the true lengths of 3-4, 5-6, etc., must be found in diagram, because top is not flat. The spaces as 2-4, 4-6, 6-8, etc., are taken from upper solid curve of throat pattern and the spaces 1-3, 3-5, 5-7, etc., are taken from upper solid curve of heel pattern. Again allowances must be added for seaming. The true lengths of dotted lines must be found as for bottom.

lines drop one space from end to end and there is a slight difference in length between the solid and dotted lines in plan. The perpendicular distance from 2-22 to the closer points is equal to the length of solid lines, while the distance to farther points is equal to length of dotted lines in plan.



#### Roofing Slate 8x14

From Ellingson and Cunningham, Edgerton, Wisconsin.

Can you tell us where we can buy roofing slate 8 by 14?

Ans.—Vendor Slate Company, 140 South Dearborn Street; Rising and Nelson Slate Company, 2554 West Harrison Street; Davis Slate and Manufacturing Company, 618 East 40th Street, all of Chicago; Auld & Conger Company, Cleveland, Ohio.

#### Furnace Vacuum Cleaners

From Devino Company, Inc., 16 Bennett Avenue, Waterbury, Connecticut:

We will appreciate your advising us who manufactures furnace vacuum cleaners. Ans.—Homer B. James Company, 717 Ohio Street, Terre Haute, Indiana; National Super Service Company, 812 Lafayette, Toledo, Ohio; Brillion Furnace Company, Brillion, Wisconsin; Williamson Heater Company, Cincinnati, Ohio, and B. F. Sturtevant Company, Hyde Park, Boston, Massachusetts.

#### Radiator Shields and Enclosures.

From Minet Heating Supply Company, 865-867 East Ferry Street, Buffalo, N. Y. Street, Chicago.

Will you please give us the names of several manufacturers of radiator shields and enclosures, besides the Tuttle and Bailey Mfg. Company and the Hart and Cooley Mfg. Company?

Ans.—Beh and Company, 1140 Broadway, New York City (shields only); The Thomas and Armstrong Company, London, Ohio; Bomar Manufacturing Company, Inc., 637 South Campbell Avenue, Louisville, Ky.; Moistair Cabinet Company, 6036 Wentworth Avenue, Chicago; Peerless Radiator Cabinet Company, 228 North La Salle Street, Chicago, and Schleicher, Inc., 310 South Michigan Avenue, Chicago.

#### Blast Gates in Chicago.

From Christian Roder, 1619 Byron street, Chicago.

Please tell me who in Chicago makes blast gates for blow piping.

Ans.—B. F. Sturtevant Company, 410 North Michigan Avenue; American Blower Corporation, 228 North La Salle Street,; Buffalo Forge Company, 562 Washington Boulevard, and Invincible Blow Pipe Company, 1822 North Lamon Avenue.

#### "Carew" Cutting Pliers.

From South Butte Hardware Company, 1752 Oregon Avenue, Butte, Mont.

Can you tell us who makes the "Carew" cutting pliers?

Ans.—N. W. Robinson Company, 28 Warren Street, New York City.

#### Furnace Vacuum Cleaners.

From E. J. Stovicek, 12701 Miles Avenue, Cleveland, O.

We should like to know who makes furnace vacuum cleaners.

Ans.—Williamson Heater Company, Cincinnati, Ohio; National Supply Service Company, 812 La-

fayette, Toledo, Ohio; B. F. Sturtevant Company, Hyde Park, Boston, Mass.; Brillion Furnace Company, Brillion, Wis., and Homer B. James Company, 717 Ohio Street, Terre Haute, Ind.

#### Air Filter for Warm Air Heating System.

From Holland Furnace Company, 988 Cherokee Street, Denver, Colo.

Please tell us who makes an air filter for warm air heating systems.

Ans.—The Warm Air Furnace Fan Company, 6511 Cedar Avenue, Cleveland, Ohio, and F. Meyer and Brother Company, Peoria, Ill.

#### Imitation Oil Burning Log for Fireplace.

From L. F. Brandt, Glencoe, Minn.

Can you inform me who makes imitation wood heated by oil which gives a blue blaze and looks like natural wood, for use in a fireplace?

Ans.—Everbrite Stove Company. 2014 Main Street, Kansas City, Mo.

#### Phoenix Natural Gas Range.

From L. C. Nye, Athens, O.

I should like to know who makes the Pheonix Natural Gas Range.

Ans.—Baker-Nagle Company, Belleville, Ill.

#### Nickel Plated Zinc.

From Riverside Hardware Company, 2231 Riverside Boulevard, Sioux City, Iowa.

Please tell us who makes nickel plated zinc for covering kitchen cabinet work boards.

Ans.—American Nickeloid Company, Peru, Ill., and Apollo Metal Works, LaSalle, Ill.

#### "Prest-O-Lite" Outfit.

From Fred Koch, Rogers City, Mich. Can you tell me who in Chicago makes or sells the Prest-O-Lite Acetylene Blazing and Soldering Outfit?

Ans.—It is made by Oxweld Acetylene Company, 3642 South Jasper Place.

#### Roofing Slate.

From Justman Sheet Metal Works, 1171 Iowa Street, Dubuque, Iowa.

Please advise us who makes slate roofing in Chicago.

Ans.—Vendor Slate Company, 120 South Dearborn Street; Rising and Nelson Slate Company, 2554 West Harrison Street; Davis Slate and Manufacturing Company, 618 East Fortieth Street, and Sheldon Slate Company, 2654 Ward Street.

#### Monel Metal.

From George B. Cummings, 710 Fourth Avenue, S. E., Minot, N. D.

Will you kindly tell me where I can buy Monel Metal?

Ans.—It is made by the International Nickel Company, 67 Wall Street, New York City, and is carried in Chicago by Steel Sales Corporation, 129 South Jefferson Street, Chicago, Ill.

#### Automatic Furnace Regulators.

From Budd—The Furnace Man, 266 Fayette Street, Hammond, Ind.

Can you tell me who, besides the National Regulator Company, make automatic furnace regulators.

Ans.—H. M. Sheer Company, Quincy, Ill.; Thermo-Control Regulater Company, 710 Market Street, Youngstown, Ohio; Minneapolis-Honeywell Regulator Company, Minneapolis, Minn.; Gray Brothers, Inc., Plano, Ill., and White Manufacturing Company, 2362 University Avenue, St. Paul, Minn.

#### Booster Type Fan for "The Heat Hustler."

From H. M. Tovar Company, 411 Pine Street, Port Huron, Mich.

We should like to know about the booster type fan used by the furnace called "The Heat Hustler."

Ans.—Refer to American Foundry and Furnace Company, Bloomington, Ill.

#### Furnace Fans.

From Mr. Budd, 266 Fayette Street, Hammond, Ind.

I should like to know the names of several concerns making furnace fans, besides the Warm Air Furnace Fan Company of Cleveland, Ohio.

Ans.—A. H. Robinson Company, Massillon, Ohio; Williamson Heater Company, Cincinnati, Ohio; A-C Manufacturing Company, Inc., 417 Sherman Street, Pontiac, Ill.; Heating Systems Corporation, 307 Scott Street, Joliet, Ill.; Canton Furnace and Manufacturing Company, Canton, Ohio; Time-O-Stat Controls Company, Elkhart, Ind.

#### Chicago Furnace Supply Co. Has Evolved Novel Sales Idea

The Chicago Furnace Supply Company, 1278 Clybourn Avenue, Chicago, manufacturers of furnace pipe, elbows, fittings and furnace supplies, has compiled an interesting set of six folders describing and illustrating their products for use by furnace dealers.

In connection with this idea they have developed a rather novel method of interesting customers for the dealer with a folder embodying a complete "Shurelock Homes" detective tale, including the famous Baker Street and the equally famous Dr. Whatson, but being founded on a vital heating problem. This folder is gotten out for the express use of dealers in interesting customers in warm air heating products.

The company has also within recent months made several new additions to its line. Full information can be had regarding this new sales idea by writing to the company direct.

This company has been in existance since 1902. It operates a wellequipped manufacturing plant in which it has brought out many sheet metal and warm air heating specialties.

#### Sturtevant Co., Boston, Establish Denver Branch

B. F. Sturtevant Co., Hyde Park, Boston, is establishing a new branch office, April 1, at Denver to handle sales in Montana, Utah, Wyoming, Colorado and New Mexico, in charge of John McCracken, who has been head of the order department at the western plant at Sturtevant, Wis., near Racine.



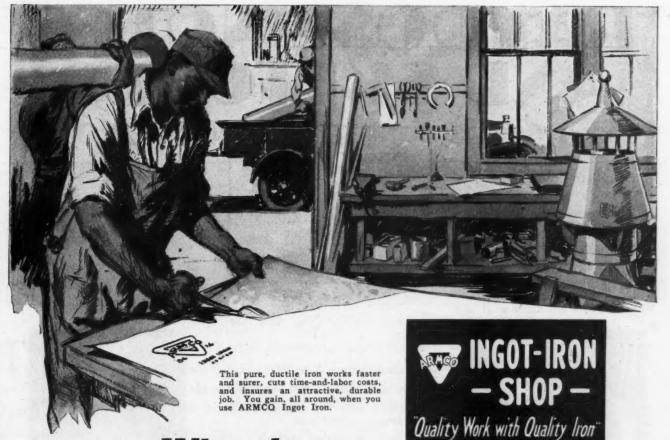
Illinois Sheet Metal Contractors' Association, April 16, 17, 18, 1929, Peoria, Illinois. Secretary, Ralph W. Poe, 44 White Court, Canton, Illinois.

New York State Sheet Metal Con-

New York State Sheet Metal Contractors' Association, April 24 and 25, 1929, at Utica, New York. Dayton Hessler, secretary, 913 North State Street, Syracuse, New York. Metal Branch, National Hardware As-

Metal Branch, National Hardware Association, annual meeting, Statler Hotel, Detroit, Michigan, May 16 and 17, 1929. Chairman F. O. Schoedinger, Columbus,

National Association of Sheet Metal Contractors of the United States, Lord Baltimore Hotel, Baltimore, Maryland, June 3 to 7, 1929. Secretary, W. C. Markle, 336 Fourth Avenue, Pittsburgh, Pennsylvania.



## Why they use durable ARMCO Ingot Iron



Seventeen years ago, J. L. Thompson, of Gas City, Indiana, installed cornices, gutters, downspouts and flashings of ARMCO Ingot Iron on this residence. No replacements have been necessary since. His work will probably last as long as the building stands.

The shops that display the sign shown above are well known for their "quality work with quality iron."

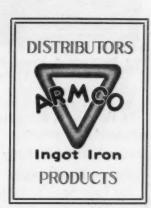
They realize the advantages of tying in to the Ingot Iron Shop Movement . . . they know how ARMCO's National Advertising Campaign paves the way for more and profitable business . . . how, too, the ARMCO Distributors' Association provides effective dealer helps that sell their services to prospects and customers.

And this is not all. Their customers get most for their money with ARMCO Ingot Iron; and it conserves overhead costs because it works so easily.

Does your business need the stimulation which an active membership in the Ingot Iron Shop movement would assure? Ask any of our salesmen to explain. Or, write us direct.

The ARMCO Distributors' Ass'n of America

Executive Offices, Middletown, Ohio



There is a warehouse stock of ARMCO Ingot Iron near you. Any member of the ARMCO Distributors Ass'n will gladly supply your needs. Write for names of members in your vicinity.

ARMCO INGOT IRON RESISTS RUST

## RANDOM NOTES AND SKETCHES

It certainly takes the colored parson to employ effectively the art of blackmail.

Upon occasion one of the aforesaid gentlemen was making an appeal for money one Sunday morning and said: "In conclusion, brethren, dis money sho' gotto be raised, and I mus' say dat if day ain't no five dollar bills in dat collection box dis mornin', a certain gemman's wife will know what lady



Two Merchant & Evans Men, S. J. Carroll and Edw. L. Connor

he was seed wif a few nights ago!"

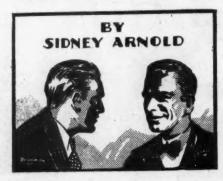
There were 14 five dollar bills in the plate.

#### Good Logic

The farm hand took his girl out for a buggy ride. Nine miles out in the country the horse dropped dead. Louise said she knew she'd drop dead, too; it was a terrible predicament.

"Suppose I give you a nice, sweet kiss. That will put lots of life in you."

"Are you sure that a kiss will put lots of life in me?"



"Positive, darling."

"Then suppose you kiss the horse."

#### Look Before You Speak

The near-sighted man and his wife were inspecting the latest art exhibit with critical care.

"That's the ugliest portrait I've ever seen," he cried angrily, striving vainly for a better view of the abomination.

"Come away, you fool!" replied his wife. "You are looking at yourself in a mirror."

Buck: "What's the difference between my dog and the planet Mars?"

Wing: "Just what is the difference between your canine and the planet Mars?"

Buck: "We know that my dog is inhabited."

#### Must Be an Expert

A group of traveling men were swapping lies about their radios in a country store. An old man had been listening silently.

"Got a radio, old man?" asked one of the drummers.

"Yeah," replied the old fellow, "I got a little two-tube affair. It's a pretty good one, though."



"Can you tune out these little stations with it?"

"Well, I was listening to a quartet the other night, an' I didn't like the tenor so I just tuned him out and listened to the three of 'em."

"Nature," said the philosopher, "always makes compensations. If one eye loses sight, the other becomes stronger; if one loses the



Emil Voss, General Manager of Royal Ventlator Co.

hearing of one ear, the other becomes more acute."

"I believe you're right." said an Irishman. "I've always noticed that when a man has one leg short, the other is longer."

They had just come in from Where From to see the old-fashion show.

"Gracious, Hiram!" said the old lady, "them awful society women dress like they was goin' swimmin'!"

"O' course, Jerusha. Hain't you heard that in the social swim the wimmin try to outstrip each other?"

### Ventilators of Anaconda Copper selected for new machine shops by Grand Trunk Railroad



Ventilators of Anaconda Copper in the new machine shops of the Grand Trunk Railroad, Battle Creek, Mich

THE above illustration shows a small section of an installation of forty-six 24-inch turbine ventilators in the new machine shops of the Grand Trunk Railroad at Battle Creek, Mich. These ventilators were manufactured by the Allen Air-Turbine Ventilator Company of Detroit and installed by Shouldice Bros., of Battle Creek. They can be depended upon to function under all weather condi-

tions, for they are made entirely of rust-proof Anaconda Copper.

The selection of Anaconda Copper is significant. The smoke laden atmosphere always present in the vicinity of railroad yards is very corrosive and the fumes drawn through the ven-

tilators are likely to be more so. Under the circumstances, it is natural that the manufacturer should select the highest quality metal obtainable to safeguard the efficiency of his product. Anaconda Copper is manufactured with the highest metal-lurgical skill by the world's largest and most experienced producers of Copper, Brass and Bronze. Its uniform quality and ready workability are due

to the scrupulous care attending every stage of manufacture from mine to consumer.

Stocks in the form of Sheets, Rolls and Economy Strips are maintained by leading distributors, assuring prompt deliveries to all

sections of the country.



THE AMERICAN BRASS COMPANY
GENERAL OFFICES: WATERBURY, CONN.
Canadian Mill:
ANACONDA AMERICAN BRASS LTD
New Toronto, Ont.

Sheet Metal Work of
ANACONDA COPPER

Look for the name ANACONDA in every sheet and strip. Leading supply houses carry it

#### Steel Output Jumps Ahead Decade

#### March Ingot Rate at Peak Indicated for 1940—Some Variations in Demand But Aggregate Unchanged—Car Buying Brisk—Prices Strong

STEEL production in March jumped ahead more than a decade. From 1918 to 1928 the increase in the highest daily ingot rate was from 153,298 to 172,144 gross tons, or approximately 19,000 tons. But March, with a daily rate of 194,199 tons, scored a net gain of almost 22,000 tons over the peak of 1928 and attained a height which the trend indicated would not be reached before 1940.

March also was notable in that for the first time open hearth and bessemer ingot output exceeded 5,000,000 tons. At the rate which netted March a total of 5,049,176 tons, 1929 would be a 60,395,000 ton year, or more than 10,000,000 tons over the record of 1928.

When steel making capacity in March was speeded up to 103 per cent it registered another record for the month.

Despite this record production in March and in the first quarter, when the ingot total soared to 13,849,701 tons, order books of steel producers give no indications that the country's requirements for steel have been exhausted. In general, specifications received by mills in the past week have equalled shipments. For bars, plates and strip, mill capacity is engaged, conservatively, well into May, and for the higher finishes of sheets little second quarter material is available.

The time also approaches when steelmaking equipment, pressed at an average of 95.4 per cent during the first quarter, requires repairs. But at the moment the incidence of these factors on mill order books is negligible.

#### Pig Iron

A number of orders for pig iron are being received at Pittsburgh, but the market is featured more by heavy specifications than new business, as most consumers have covered for second quarter.

New bookings generally are con-

fined to small lots, with occasional orders for 300 to 500 tons. One sale of 1,000 tons of car wheel iron is reported.

A 500-ton order for malleable was booked by a furnace at \$18.50, Some sales of the latter grade are heard of at a lower figure. Sales of bessemer iron are light, but \$18.50 is the general price. Basic iron is quiet.

Furnaces report pressure from consumers for deliveries, and shipments against contracts are heavy. Backlogs, however, are well main-

Pressure for deliveries of pig iron at Chicago is unchecked as furnace output continues behind shipments, which are equivalent to the March

Several additional producers of large castings have ordered iron for delivery extending through July and August. Supplemental buying for second quarter is moderately heavy. Numerous buyers are increasing their earlier shipping requisitions. Blast furnaces are planning to maintain their present full operations for some months, unless repairs become The Chicago furnace necessary. price is steady at \$20 for the base grades.

Pig iron selling is slow at Birmingham, production steady and shipments equal to the make with some of the blast furnace interests Tonnage booked following the recent reduction to \$15.50 for No. 2 foundry iron will provide steady operations and shipments for at least 30 days.

Consumers are not carrying much iron in their yards. A little tonnage is being shipped to Ohio river districts.

Shipment and consumption of all metals continue far above the averages of the past year and at the highest levels ever reached. Stocks in producers' hands are exceptionally light in proportion to consumption.

Only in copper, however, are stocks actually below average. The true situation has been somewhat obscured by the erratic movements of speculative markets such as the New York stock exchange and the London metal exchange.

Brass and copper mill products are well booked for several months ahead and mills are operating about at capacity in most departments.

#### Copper

Red metal fell off to 22.00c, delivered in the open market on Tuesday as a result of effort to move metal in the dull market which had prevailed for about 10 days. Producers generally, however, continue to quote 24 cents but this meant little with custom smelters offering metal at 22.00c, delivered. Some copper is available at 19.75c. Prices went down with a smash in London on Tuesday. This accompanied action of Copper Exporters, Inc., which permitted smelters belonging to it to sell nearby metal abroad at 22.25c, c.i.f. European ports.

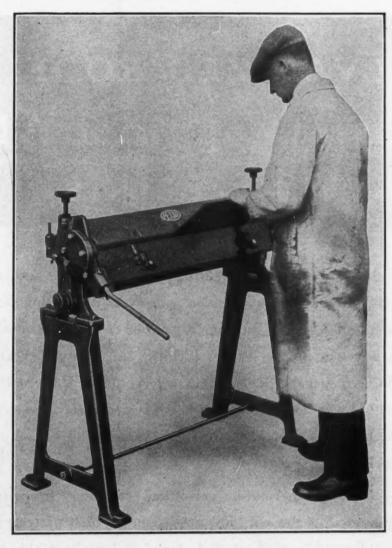
Previous to Tuesday, a light tonnage of speculative copper was offered at bargain prices in a market where users were well covered. Some of this metal was taken up by producers. Export buying as well as domestic continues light, but it is believed foreign users still must cover needs for June and July, although domestic users are well covered for these months.

#### Lead

Prices have eased off to 7.10c, East St. Louis, following two cuts by the leading interest to 7.25c, New York. Demand has not been very active and most likely for April and May.

Ouotations are holding unchanged in a dull market.

Light demand and declining prices in London and this country have characterized the tin market.



Combination Brake and Folder. Furnished for bench use or with iron floor legs.

#### FOR ECONOMY'S SAKE

Place this Combination Brake and Folder alongside your big brake, and speed up shop production.

Locks and angles can be formed on short sheet metal members in a fraction of the time that it would take to form small jobs on the big brake.

A simple lever motion clamps the sheet in a jiffy. The front and rear gauges provide that

convenience so often lacking in the regular brake.

Where narrow and wide locks and angles enter into the making of sheet metal products, this machine is greatly in demand. It is built on the brake principles with added features for making it a general utility Folder and Brake.

There is nothing to risk or lose when you specify PEXTO.

Guide No. 25A—Hand Machines and Tools for Sheet Metal Work. Catalogue No. 25A—Hand and Power Machines and Tools for Sheet Metal Work.

Power Squaring Shears, Power Presses and Power Double Seaming Machines are offered in individual bulletins. If interested, write for prospectus.



THE PECK, STOW & WILCOX COMPANY Southington, Connecticut, U.S.A.

When writing mention AMERICAN ARTISAN-Thank you!

# GALVANIZED ROOFING Protects against ALL THE ELEMENTS

Galvanized roofing and siding not only protect against rain, snow and sleet, but also against the devastating elements of fire and lightning. Galvanized roofing and siding are fire-safe. Flying embers alighting on galvanized sheets do no damage to the building or its contents. If fire starts within a building roofed with galvanized sheets, the roof acts as a blanket and aids in preventing the spread of such a fire.

—And, furthermore, galvanized roofing, properly grounded, is the only low cost roofing which protects a building against lightning. As far as we have been able to determine, no such building has ever been damaged by lightning. You cannot get lightning protection with other inexpensive roofings without installing additional devices at extra cost.

You can sell galvanized sheets to practically every farmer in your community if you show him how this material protects against all the elements. — And be sure to remind him that fires cost the farmers \$150,000,000 in 1928 and snuffed out 3,500 lives. Sheet Steel Trade Extension Committee, Terminal Tower Building, Cleveland, Ohio.

# GALVANIZED SHEETS Protect against lightning

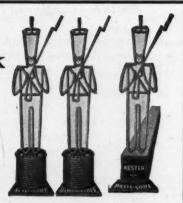


#### Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN is the only publication containing Western Metal, Furnace Supply and Hardware prices corrected weekly

METALS	LEAD American Pig\$8 85	Adams' Sheet Metal	FIRE POTS
PIG IBON	Bar 9 86	7 inch, doz	No. 02 Gasoline Torch. 1
Chicago Fdy., No. 2	Bar Tinper 100 lbs. \$55 56 Bar Tinper 100 lbs. 56 56	10 inch, doz 2 80	No 0050 Veresere or
Lake Superior Chargoal 27 04 Malleable 20 00	HARDWARE, SHEET	14 inch, doz 6 00	No. 10 Tinner's Furn. Square tank, 1 gal 11 1
FIRST QUALITY BRIGHT CHARCOAL TIN PLATES	METAL SUPPLIES, WARM AIR FURNACE	MAYAS INCOUN	No. 15 Tinner's Furn.
IC 20x28 112 sheets\$22 56 IX 20x28 35 56 IXX 20x28 56 sheets 14 56 IXXX 20x28 15 56 IXXXX 20x28 17 04	FITTINGS AND ACCES		No. 21 Gas Soldering Fur- nace 8 6
	ASBESTOS Paper up to 1/166c per ib.	Conductor Pipe	No. 110 Automatic Gas Soldering Furnace 10 8
TERNE PLATES Per Box IC 29x28, 40-lb. 112 sheets \$26 70 IX 20x28, 40-lb. 112 sheets 29 70	Roll board	Galv. plain or corrugated, round flat Crimp,	GALVANIZED WARE
IC 30x28, 25-lb. 112 sheets 22 20 IX 20x28, 25-lb. 112 sheets 25 20 IC 20x28, 20-lb. 112 sheets 20 25 IV 20x28, 20-lb. 112 sheets 23 00	sq. ft. to roll)\$6 00 per rell BRUSHES	28 Gauge	Pails (Galv. after prade), 10-qt\$3
"ARMCO" INGOT IRON PLATES	Bristle with handle each \$0 75	Galv. Terne Steel	Tubs (Galv. after made). No. 1
No. 8 ga.—100 lbs\$4 15 2/16 in.—100 lbs 4 05	Steel only, each 1 25	Plain Rd. and Rd. Corr.:	No. 2 6 6
COKE PLATES		28 Ga	GLAS5
Cokes, 80 lbs., base, 20x28 \$12 00 Cokes, 90 lbs., base, 20x28 12 20 Cokes, 100 lbs., base, 20x28 12 40	American Seal, 5-lb. cans, net \$ 45 American Seal, 10-lb. cans, net 85 American Seal, 25-lb. cans, net 2 25 Pecoraper 100 lbs. 7 50	24 Ga15% Square Corrugated	Single Strength, A, all brackets85%
Cokes, 107 lbs., base, IC 20x28	CHIMNEY TOPS	No. 28 Gauge50% 26 Gauge35%	Single Strength, B, all brackets87%
Cokes, 185 lbs., base, IX 29x28	Wt. Doz. Price Doz. 4 in21 lbs\$11 00	Portico Elbows	Double Strength, A, all brackets85%
56 sheets	6 in	Standard Gauge Conductor Pipe, plain or corrugated.	Double Strength, B, all brackets87%
Cokes, 195 lbs., base 4X, 56 sheets	9 in	Not nested	HANGERS
	CLINKER TONGS Each\$1 50	Sq. Cerr., A. & B. & Octagen 28 Ga	Conductor Pipe
ONE PASS COLD ROLLED BLACK No. 18-20per 100 lbs. \$3 60 No. 22per 100 lbs. 2 75	Damper	26 Ga35%	Milcor Perfection Wire35% Milcor Triplex Wire16% Enves Trough
No. 24per 100 lbs. 8 80 No. 26per 100 lbs. 8 90 No. 27per 100 lbs. 3 95	No-Rivet Steel, with tail pieces, per gross\$9 &0 Rivet Steel, with tail pieces, per gross 7 50	1", 14", 14"46%	Milcor Steel (galv. after forming) Listplus 13%% Milcor Selflock E. T. Wire,
No. 28per 100 lbs. 4 05 No. 29per 100 lbs. 4 20 No. 30per 100 lbs. 4 80	Tail pieces, per gross 3 40	Copper  16 oz., all designs50%	Listplus 50%
"ARMCO" GALVANIZED	COPPERS—Soldering Pointed Roofing	Zine—	Conductor
'Armeo" 24per 100 lbs. \$6 15 GALVANIZED	3 lb. and heavierper lb. 49c 2½ lbper lb. 45c 2 lbper lb. 48c 1½ lbper lb. 55c	All styles60%	"Direct Drive" Wrought Iron for wood or brick15%
No. 16per 100 lbs. \$4 16 No. 18per 100 lbs. 4 30	1 lbper lb. 60c,	ELBOWS—Stove Pipe	HUMIDIFIER
No. 20per 100 lbs. 4 50	CORNICE BRAKES Chicago Steel Bending	1-piece Corrugated. Uniform Blue "Milcor" No. 28 Gauge. Doz.	"Front-Rank," Automatic
No. 24per 100 lbs. 4 66 No. 26per 100 lbs. 4 90 No. 27per 100 lbs. 5 00	Nos. 1 to 6BNet	5-inch	In single lots
Vo. 28per 100 lbs. 5 15 Vo. 30per 100 lbs. 5 55	Gal., plain, round or cor. rd.	7-inch 1 75	In lots of 10 or more50-5%
BAR SOLDER	26 gauge	Special Corrugated 6-inch	Vapor pans, etc., each50%
Varranted 50-50 per 100 lbs. \$33 75 8-52per 100 lbs. 33 00	DAMPERS "Yankee" Hot Air	7-inch 1 60	
5-55per 100 lbs. 31 75 lumbers'per 100 lbs. 29 75	7 inch, each 20c, doz \$1 60	Adjustable—Uniform Blue "Milcor" No. 28 Gauge. Uniform	Stove Cover
ZINO	8 inch, each 25c, doz 2 20 9 inch, each 30c, doz 2 60 10 inch, each 32c, doz 2 80 Smoke Pipe	Blue.	Copperedper gro. \$6 00
n Slabs 7 25	7 inch, doz	5-inch	Alaskaper gro. 4 75
SHEET ZINC cask Lots (600 lbs.)\$11 75	9 inch, doz 3 00 10 inch, doz 3 75	7-inch 2 10 WOOD FACES—60% off list.	MALLETS
heet Lots	12 inch, doz 4 50		Hickoryper doz. \$3 36
heets, Chicago base28 % c liss base27 % c	ADAMS No. 1 CHECK Check and Collar Complete 8 inch, each	FENCE 726-6-124% (100 rods)\$28 68	MITRES
ubing, brazed, Chicago base 30 % C	9 inch, each	1948-6-14%% (100 rods) 43 62	Galvanized steel mitres
ubing, seamless, Chicago base	8 inch, each 1 60 9 inch, each 1 85 Collar Only 8 inch, each 50	FILES AND RASPS	28 Ga
ods. Chicago Base27% c	9 inch, each	American60-10%	
Illi base24% c	No. 2 CHECK 8 inch, each	Arcade	NAILS
	9 inch. each	Eagle50%	Cut Steel, base\$4 00
COPPER	10% Disc. on Adams No. 1	Garage Wilselson	
	10% Disc. on Adams No. 1 and No. 2 Check Diamond Smoke Pipe 7 inch, doz. \$2 00 8 inch, doz. 3 20	Great Western	Wire Common

# For Any Metal Work the KESTER Corps is Ready



Too bad, but true . . . that parts to be soldered are not always new.

But what difference is that to a KESTER Flux-core Solder? None at all!

That is when the KESTER Corps of Fluxcore Solders is best. The flux, contained within the solder itself, flows out just before the solder melts.

And that's why the combination of flux and solder is ideal. Merely "a touch of heat and the job is done."

Write for full information about KESTER SOLDERS with any of the following fluxes: Acid, Rosin and Paste.

Established 1899

CHICAGO SOLDER CO., 4241 Wrightwood Ave., Chicago

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#### THIS MEANS SERVICE

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CARRIED IN STOCK BY YOUR NEAREST JOBBER INSURING PROMPT SHIPMENT OF QUALITY MATERIAL.

EVERY ITEM OF THE B. B. LINE IN A CLASS BY ITSELF. LOOK FOR THE B. B.

B. B. Conductor Hooks and Gutter Hangers, "SHUR-LOCK" Conductor Pipe, "E-Z Fit" Eaves Trough, "Quaker City" Mitres, Ends, Caps and Outlets. Other items in our No. 10 Catalog.

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229 TO 237 ARCH ST.

PHILADELPHIA

# All Sizes and Shapes of Holes In Steel, Zinc, Brass, Copper, Tinplate, etc. For All Screening, Ventilating and Draining EVERYTHING IN PERFORATING METAL

THE HARRINGTON & KING PERFORATING (O. BA. - 5649 FILLMORE ST. - CHICAGO, ILL, U. S. A. H



Quality and Service Made 'em Famous

Made of one piece of heavy gauge material, in all styles and angles from 10 to 90 degrees, of 24, 26; 28 ga. ternes, then galvanized after formation.

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are the standard of the market and always give satisfaction

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Square
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Style A

Not made lighter than
28 ga. or 16 oz. copper

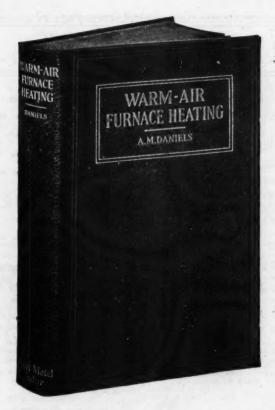
#### ADVERTISERS' INDEX

The dash (-) indicates that the advertisement runs on a regular schedule but d

	merican Foundry & Furnace	Lennox Furnace Co	Bach 1	1, 72 x 76, per gross
-	Co	Linde Air Products Co		No. 10, %x3/16, per gross 68
A	merican Furnace Co 53	Lupton's Sons Co., David	POKERS, STOVE	No. 14. %x%, per gross 88
	rmco Distributors Assn. of	W	Mickel Bloted sell handles	ite. It. Mark. per gross.
	America 83	M	Nickel Plated, coll handles, per doz	CT ACTIVIDATE LINE
A	merican Wood Register Co	Marshall Furnace Co 46	W'r't Steel, str't or bent.	
A	rex Co 98	Magirl Foundry Furnace Co	per doz \$0 75	SHEARS, TINNERS'
A	uer Register Co 52	Maplewood Machinery Co 95		& MACHINISTS'
A	utomatic Humidifier Co 58	Marshalltown Mfg. Co 93 May-Fiebeger Co 57	PIPE	
		McIlivaine Burner Corp 99	Conductor	Viking
	В	Meyer & Bros. Co., F 54	Cor. Rd., Plain Rd., or Sq.	Lennox Throatless
P	arnes Metal Products Co	Meyer Furnace CoFront Cover	Galvanized	No. 1836%
B	eckwith Co., The	Midland Furnace Co 62		
	eh & Co	Milwaukee Corr. Co. Back Cover	Crated and nested (all gauges)	Shear blades
	erger Bros. Co 91	Mt. Vernon Furn. & Mfg. Co 52	Crated and not nested	(f. o. b. Marshalltown, Iowa)
	. & F. Mfg. Co	Mueller Furnace Co., L. J	(all gauges)75.2%%	
	erger Co., L. D		Furnace Pipe	
	ertsch & Co 95	N		CHINA DO AD THOMADI D
	rillion Furnace Co52, 59	National Regulator Co	Double Wall Pipe and Fittings	SHIELDS, ADJUSTABLE
B	urgess Soldering Furnace Co	National Super Service Co 59	Single Wall Pipe, Round	RADIATOR
	C	New Jersey Zinc Sales Co.,	Galvanized Pipe	No. 1 "Gem" 11" to 17"30%
~		The	tings	
	anton Furnace & Mfg. Co 49	Northern Oil Burner Co 43	The second secon	No. 2 "Gem" 14" to 24"30%
	entral Alloy Steel Works		Lead	No. 8 "Gem" 35" to 66"30%
	dicago Furnace Supply Co 56	0	Per 100 lbs\$12 50	
	hicago Solder Co 91			
-	eveland Castings Pattern Co. 59	Osborn Co., The J. M. & L. A. — Oxweld Acetylene Co	Stove Pipe	SHOES
	olburn Heater Co	Oxweld Acetylene Co	"Milcor" "Titelock" Uniform Blue	
	onnors Paint Co., Wm		Stove	Galv. 28 Gauge, Plain or cor-
	opper & Brass Research As-	P	28 gauge, 5 inch U. C. nested	rugated round flat crimp 60%
	sociation	Parker, Kalon Corp	28 gauge, 6 inch U. C.	26 gauge round flat crimp 45%
		Peck, Stow & Wilcox 87	nested	
	D	Peck, H. E	nested	24 gauge round flat crimp15%
D	eckmann Co., Ferdinand 91	Premier Warm Air Heater Co. 42	30 gauge, 5 inch U. C.	
	ener Mfg. Co., Geo. W 95	Prest-O-Lite Co., Inc	nested	SNIPS, TINNERS
	reis & Krump Mfg. Co 95		nested	SAILS, IIMABAS
		Q	30 gauge, 7 inch U. C. nested	Clover Leaf 40 & 10%
	E	Quincy Pattern Co 59		National
E	ermann, Wm	STATE OF STA	T-Joint Made up	
E	mrich, C., Co 57	R	6-inch, 28 ga per tes * 1 40	Star
		Richardson & Boynton Co 44	No. 11, all styles 60%	Milcor Net
	F	Robinson Co., A. H 45	10. 11, 811 50,165	
F	nner Mfg. Co	Rock Island Register Co 55		
F	rris Furnace Co	Rybolt Heater Co	PULLEYS	SQUARES
F	oral City Heater Co	Ryerson & Sons, Inc., Jos. T 95	Furnace Tackleper doz. \$0 85	Steel and IronNet
	ort Shelby Hotel	2 2 2 2 2	per gro. 8 50	
	x Furnace Co	S	Furnace Screw (enameled)	(Add for bluing \$3 per doz. net)
	orest City - Walworth Run	Sall Mountain Co 61		Mitre
	Fdy. Co 48.	Schwab & Sons Co., R. J		Try
F	iedley-Voshardt Co	Security Stove & Mfg. Co 58	PUTTY	Try and BevelNet
		Sheer Co., H. M 98	Commercial Putty, 100-lb.	Try and MitreNet
	G	Sheet Steel Trade Extension	Kits	
	aff Furnace Co	Committee88-89	QUADRANTS Malleable Iron Damper10%	Fox'sper doz. \$6 00
Gie	rock Bros. Mfg. Co 95	Standard Furn. & Supply Co	The state of the s	Winterbettom's16%
	. н	Standard Fdry. & Furn. Co 50		
**	The state of the s	Standard Ventilator Co 93	REDUCERS—Oval Stove Pipe	- India III and the second
		St. Louis Tech. Inst 98	Per Doz.	STOPPERS, FLUE
		Success Heater Mfg. Co	7-6, 28-gauge, 1 doz. in	O-man -
	enry Furnace & Foundry	THE PARTY OF THE P	carton\$2 00	Commonper doz. \$1 10
	Co The	T		Gem, No. 1per doz. 1 10
	m. Highton & Sons Div 56	Taylor Co., N. & G	REGISTERS AND BORDERS	Gem, flat, No. 3per doz. 1 40
	omer Furnace Co	Technical Products Co	Baseboard, Floor and Wall	
	oran Stay Hanger Co	Thermo-Control Regulator Co 56		
	otel Sinton	The Thatcher Co	Steel and Semi-Steel33 1/4 %	VENTILATORS
	yro Mfg. Co	Tuttle & Bailey Mfg. Co	Baseboard, 1 piece33 14-20 %	
		XXth Century Htg. & Mfg. Co	Baseboard, 2 piece33 1/3 % Wall33 1/3 %	Standard30 to 40%
	1		Adjustable Celling Ventilators	
In	dependent Register & Mfg.	V.		Approximation of the second
	Co	Vedder Pattern Works 59	Register Faces-Cast and Steel	WIRE
	land Steel Co.	Viking Shear Co 95	Japanned, Bronzed and	Black annealed wire, No. 9,
In			Plated, 4x6 to 14x1433 1/2 %	per 100 lbs\$3 \$6
	terstate Machinery Co	447	Large Register Faces-Cast,	Galvanized barb wire, per
	terstate Machinery Co	W		
	terstate Machinery Co	Warm Air Furnace Fan Co	14x14 to 38x4250% Large Register Faces—Steel,	
In		Warm Air Furnace Fan Co — Waterloo Register Co	Large Register Faces—Steel, 14x14 to 38x4260%	100 lbs 8 96
In	hnson Co., Chas 58	Waterloo Register Co 55 Waterman-Waterbury Co	Large Register Faces—Steel, 14x14 to 38x42	100 lbs 3 96 Cattle Wire—galvanized catch
Jo	hnson Co Chas 58	Waterloo Register Co	14x14 to 38x42	100 lbs
Jo Ke	hnson Co Chas	Waterloo Register Co 55 Waterman-Waterbury Co	14x14 to 38x4260%	100 lbs 3 96 Cattle Wire—galvanized catch

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American Foundry & Furnace	Linde Air Products Co
Co	Lupton's Sons Co., David
American Furnace Co 5	4
Armco Distributors Assn. of	, М
America 8 American Wood Register Co	Marshall Eurnace Co
Arex Co 9	Magirl Foundry Furnace Co
Auer Register Co 5	Maplewood Machinery Co
Automatic Humidifier Co 5	Marshalltown Mig. Co
	May-Fiebeger Co
В .	McIlivaine Burner Corp
Barnes Metal Products Co	Meyer & Bros. Co., F
Beckwith Co., The	Meyer Furnace Co Front Cove
Seh & Co	Midiand Furnace Co
Berger Bros. Co 9	Milwaukee Corr. Co. Back Cove
3. & F. Mfg. Co	Mt. vernon Fuin. & Mig. Co
Berger Co., L. D	
Bertsch & Co 9	5
Brillion Furnace Co52, 5	N
Surgess Soldering Furnace Co	National Regulator Co
3 - 1	National Super Service Co
C	New Jersey Zinc Sales Co.,
anton Furnace & Mfg. Co 4	The
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hicago Furnace Supply Co 50	
hicago Solder Co 9	
leveland Castings Pattern Co. 5	
olburn Heater Co	
hicago Metal Mfg. Co	- Oaweld Meety lene
onnors Paint Co., Wm	. Р
opper & Brass Research As-	
sociation	Parker, Kalon Corp
	Peck, Stow & Wilcox
D	Peck, H. E.
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eiener Mfg. Co., Geo. W 95	
reis & Krump Mfg. Co 95	
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G	Sheet Steel Trade Extension
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ess-Snyder Company, The	Taylor Co., N. & G
m. Highton & Sons Div 56	Technical Products Co
omer Furnace Co	Thermo-Control Regulator Co. 5
oran Stay Hanger Co	The Thatcher Co
otel Sinton	Tuttle & Bailey Mfg. Co
yro Mfg. Co	XXth Century Htg. & Mfg. Co
I	V
dependent Register & Mfg.	Vedder Pattern Works 5
Co	Viking Shear Co 9
nland Steel Co	

MarketsContin	ued from Page 90
PASTE	RIDGE ROLL
Asbestos Dry Paste:	Galv., Plain Ridge Roll,
200-lb. barrel	b'dld
100-lb. barrel 7 50 50-lb. pail 4 35	Galv., Plain Ridge Roll
10-lb. bag 1 00	crated
5-lb. bag 55 2½-lb. cartons 25	
	SCREWS
POKERS, FURNACE	Sheet Metal
Each \\$0 76	7, ½x½, per gross\$0 52
POKERS, STOVE	No. 10, %x3/16, per gross 68
Nickel Plated, coll handles,	No. 14. %x%. per gross 83
per doz 1 10	A THE PARTY OF THE
W'r't Steel, str't or bent, per doz \$0 76	SHEARS, TINNERS'
a fact among the	& MACHINISTS'
Conductor	Viking
Cor. Rd., Plain Rd., or Sq.	Lennox Throatiess
Galvanized	No. 18
Crated and nested (all	Shear blades
gauges)	while the sent that were the
(all gauges)75.21/4%	(f. c. b. Marshalltown, Iewa)
Furnace Pipe	
Double Wall Pipe and	SHIELDS, ADJUSTABLE
Fittings	RADIATOR
Galvanized and Tin Fit-	No. 1 "Gem" 11" to 17"30%
tings	No. 2 "Gem" 14" to 24"30%
Lead	No. 8 "Gem" 35" to 66"30%
Per 100 lbs\$12 50	
Stove Pipe	SHOES
"Milcor" "Titelock" Uniform Blue Stove	
28 gauge, 5 inch U. C.	Galv. 28 Gauge, Plain or cor-
nested	rugated round flat crimp60% 26 gauge round flat crimp45%
28 gauge, 7 inch U. C.	24 gauge round flat crimp15%
30 gauge, 5 inch U. C.	
30 gauge, 6 inch U. C.	SNIPS, TINNERS
30 gauge, 7 inch U. C.	
nested 13 00	Clover Leaf
r-Joint Made up	Star
6-inch, 2f ga p tes * 1 40 All Eine	Milcor Net
No. 11, all styles 60%	ESSENTIAL PROPERTY OF
PULLEYS	SQUARES
Furnace Tackleper doz. \$0 85	Steel and IronNet
Furnace Tackleper doz. \$0 85 per gro. 8 50 Furnace Screw (enameled)	(Add for bluing \$3 per doz. net)
per dos 75	Mitre'
Professional limit had been been been been been been been bee	TryNet
PUTTY	Try and BevelNet
Commercial Putty, 100-ib. Kits	Try and MitreNet
Malleable Iron Damper10%	Fox'sper doz. \$6 00
7	Winterbettom's16%
REDUCERS-Oval Stove Pipe	
Per Doz.	STOPPERS, FLUE
7—6, 28-gauge, 1 doz. in carton\$2 00	Commonper doz. \$1 10
	Gem, No. 1per doz. 1 10
REGISTERS AND BORDERS	Gem, flat, No. 3per doz. 1 40
Baseboard, Floor and Wall	
Cast Iron	VENTILATORS
Baseboard, 1 piece33 14-20 % Baseboard, 2 piece33 14 %	Standard30 to 40%
Cast Iron	
Register Faces-Cust and Steel	WIRE
Japanned, Bronzed and Plated, 4x6 to 14x1433 1/2 % Large Register Faces—Cast,	Black annealed wire, No. 9,
Large Register Faces—Cast, 14x14 to 38x42	per 100 lbs\$3 \$6 Galvanized barb wire, per
14x14 to 38x4250% Large Register Faces—Steel. 14x14 to 38x4260%	100 lbs 3 96
Ventilating Register	Cattle Wire—galvanized catch
. C welliate.	weight spool, per 100 lbs., 3 80



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ary center spindle.

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tion and any temestry to the control of the control

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Cleveland, Ohio
Lamson & Sessions Co.,
Cleveland, Ohio
Ryerson & Son, Inc., Jos. T.,
Chgo., N. Y., St. L., Det., Cleve.

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Dreis & Krump Mfg. Co.,
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Ryerson & Son, Inc., Jos. T.,
Chge., N. Y., St. L., Det., Cleve.

Brakes—Cornice.

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Brass and Copper.
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Copper & Brass Research Association,
New York

Cans—Garbage.
Osborn Co., The J. M. & L. A.,
Cleveland, Ohio

Castings Malleable.
Fanner Mfg. Co., Cleveland, Ohio

Ceilings-Metal. Ceilings—meta..
Friedley-Voshardt Co.,
Chicago, Ill.
Milwaukee Corrugating Co.,
Mil., Ch'go, La Crosse, Kan. City
Wheeling Corrugating Co.,
Wheeling, W. Va.

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Chimney Tops. Standard Ventilator Co., Lewisburg, Pa.

Clinker Tongs.

L. J. Mueller Furnace Co.,
Milwaukee, Wis.
Stover Mfg. & Engine Co.,
Freeport, Ill.

Copper. American Brass American Brass Co., Waterbury, Conn. Copper & Brass Research Association, New York Sociation, New York
Cornices.
Friedley-Voshardt Co.,
Milwaukee Corrugating Co.,
Mil., Ch'go, La Crosse, Kan. City

Cutting Blowpipes.
Oxweld Acetylene Co.,
New York, N. T.

Cut-offs—Rain Water.
Milwaukee Corrugating Co.,
Mil., Ch'go, La Crosse, Kan. City

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Milwaukee Corrugating Co.,
Mil., Ch'go, La Crosse, Kan. City
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Milwaukee, Wis. Parker-Kalon Corp., New York, N. Y. Stover Mfg. & Engine Co., Freeport, Ill.

Damper Regulators. National Regulator Co., National Regulator Co., Chicago, Ili.
H. M. Sheer Co., Quincy, Ili.
Thermo-Control Regulator Co.,
Youngstown, Ohio

Dies—Punch & Press.
La Salle Machine Works,
Chicago, Ill.

Diffuser—Air Duct.

Acolus-Dickinson Co., Chicago, Ill.
L. J. Mueller Furnace Co.,
Milwaukee, Wis.

Doors Metal.
Lupton's Sons Co., David,
Philadelphia, Pa.

Drive Screws—Hardened Metallic. Parker-Kalon Corp., 200 Varick St., New York

Eaves Trough. Barnes Metal Products Co., Chicago, Ill. Barnes Meta: Chicago, In.

Berger Bros. Co., Philadelphia, Pa.
Lupton's Sons Co., David,
Philadelphia, Pa.
Milwaukee Corrugating Co.,
Mil., Ch'go, La Crosse, Kan. City
New Jersey Zinc Sales Co., The,
New York, N. Y.
Wheeling Corrugating Co.,
Wheeling Corrugating Co.,
Conductor.

Elbows and Shoes-Conductor. Barnes Metal Products Co., Chicago, Ill. Chicago, Ill.

Chicago, Ill.

Cincinnati, Ohio
Lupton's Sons Co., David,
Philadelphia, Pa.

Milwaukee Corrugating Co.,
Mil., Ch'go, La Crosse, Kan. City

Wood Faces—Warm Air.

Auer Register Co., Cleveland, Ohio
American Wood Register Co.,
Plymouth, Ind.

Milwaukee Corrugating Co.,
Mil., Ch'go, La Crosse, Kan. City

Fittings-Conductor. Barnes Metal Products Co., Chicago, Ill. Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Flanges. Chicago Metal Mfg. Co., Chicago, Ill.

Fittings—Steel Pipe.
Chicago Metal Mfg. Co.,
Chicago, Ill.

Flue Thimbles. Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City Furnace Cement-Asbestos.

Connors Paint Mfg. Co., Wm., Troy, N. Y. Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Furnace Cement-Liquid. Technical Products Co., Pittsburgh, Pa.

Furnace Cleaners—Suction. Brillion Furnace Co., Brillion, Wis. National Super Service Co., Toledo, Ohio

Furnace Coloring (Enamel). B & F Mfg. Co., Des Moines, Iowa

Furnace Fans.
A-C Mfg. Co., Pontiac, Ill.
Canton Furnace & Mfg. Co., Canton, Ohio A. H. Robinson Co.,
Massillon, Ohio
Warm Air Furnace Fan Co.,
The,
Cleveland, Ohio
Williamson Heater Co.,
Cincinnati, Ohio

Furnace Fuse.
National Regulator Co.,
Chicago, Ill.

Furnace Regulators. National Regulator Co., National Regulator Co.,
Chicago, Ili.
H. M. Sheer Co.,
Chicago, Ili.
Thermo-Control Regulator Co.,
Youngstown, Ohio

Furnace Rings.
Forest City-Walworth Run
Foundries Co., Cleveland, Ohio
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Furnaces—Gas.
Calkins & Pearce, Columbus, Ohio
Mueller Furnace Co., L. J.,
Milwaukee, Wis.

Furnaces—Warm Air Agricola Furnace Co., Gadsden, Ala. American Furnace Co., St. Louis, Mo. Beckwith Co., The.

Dowagiac, Mich.
Brillion Furnace Co., Brillion, Wis.
Canton Furnace & Mig. Co.,
Canton, Ohio
Colburn Heater Co., Chicago, Ill.
Emrich Co., C., Columbus, Ohio
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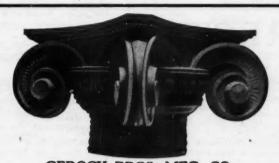
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(Continued on page 96)



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Phone 756R.

For Sale—Sheet metal, furnace and built-up roofing business in progressive Illinois town of 6,000. An established business that will pay a tinner \$400 a month on a very small investment. Must sell in order to take care of larger investment in another point. A real proposition. Will stand strictest investigation. Geo. P. Tomlinson & Son. Salem. Illinois.

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Wanted—Going sheet metal and furnace business. Will exchange six-room modern residence in St. Louis valued at \$5.500. Address J497, AMERICAN ARTISAN.

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Situation Wanted—As working foreman by a first class all-around sheet metal worker. Can read blue prints, lay out patterns, make and erect any kind of work that may come to any job shop. Can handle men. Have had twenty-five years at the trade. Married, and can furnish reference. Address Edward H. Collins, P. O. Box 158, Mayfield, Kentucky.

Situation Wanted—By first class heating and ventilating man. Have had 27 years' experience. Married and sober, can cut all my own patterns. Make any fittings, work from blue prints and do estimating. Can take charge of shop and handle men. Address Bert J. Hawkins, 117 Galusha St., Owosso, Michigan.

T-496

Situation Wanted—By an all-around, capable sheet metal worker. Lay out, assemble and erect any branch of same. Work from blue prints. Married, best of health, capable of taking charge of shop and not afraid of work. Address F-496, AMERICAN ARTISAN.

Experienced bookkeeper and office man would like to correspond with Hardware or Implement Dealer in need of competent man to take charge of the Accounting and Collections. Address Edwin P. Anderson, 329 North Fifth, Keckuk, Iowa. G-496

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Tinner and furnace installer wants place with good live Hardware Store in Middle West States. Can do plumbing, draft own patterns and figure furnace installation. Neat and accurate workman, no boozer. Can come at any time. Address R497, AMERICAN ARTISAN.

Wanted — Steady position as sheet metal and radiator man. Can do all kinds of tin work. Would like to get job in small town in Minnesota with good school. Address, Wm. O. Thompson, Box 162, Cokato, Minn.

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Wanted — Combination sheet metal worker and plumber. Must be A-1 mechanic. Prefer middle-aged married man who is able to handle all kinds of work required in a small country town of 1,000 population. A steady job for the man with ambition. Unless you are sober, honest, industrious, and steady don't waste your time answering this ad. Address L497, AMERICAN ARTISAN.

Wanted—Experienced sheet metal man to invest \$2,000 or more, with services, in growing and well established power shop in Portland, Oregon, doing a general sheet metal, furnace, blow pipe and roofing business. A good opportunity for right man. Address M497, AMERICAN ARTISAN.

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Wanted—Good all around man who can do all kinds of sheet metal work, plumbing and heating. Steady job for the right man. We prefer a fairly young man. This is one of the best towns of 3,000 in the Northwest. State when can come and what wages you want. Address A-497, AMERICAN ARTISAN.

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M-495

Can use a good sheet metal worker and furnace man in city of 30,000. Steady work the year around to right man of ability and habits. State qualifications and pay wanted in first application. Address Klinsmann Furnace & Metal Products Co., Box 1163, Fargo, N. D. Z-496

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Wanted—Sheet metal worker used to square duct ventilation and furnace work. State wages wanted and qualifications in answer. Address Noble Sheet Metal Works, 119 S. Stevens St., Rhinelander, Wis. W-496

Wanted—First class furnace and sheet metal worker, one that can lay out jobs on furnace and do roof work. Will pay \$35.00 per week for start. Address L. O. Nicholson & Son, 326 S. Jefferson St., New Castle, Pa. Y-496

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For Sale—One wiring machine with stand—\$11.50. One setting-down machine with stand—\$10.00. One bar folder with stand—\$16.00. One 50"x4" slip rolls with stand—only used on one job—good as new—\$200.00. All machines are in A1 condition. Address E-497, AMERICAN ARTISAN.

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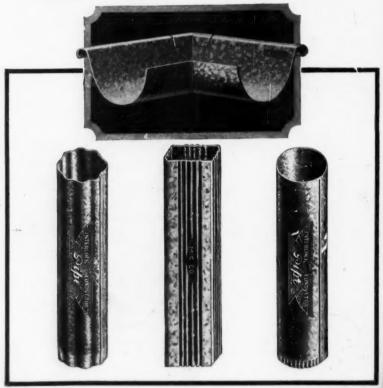
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